The Builder.

VOL. LXVIII. No. 2733 — JUNE 22, 1895.

ILLUSTRATIONS.

The East Front of the Parthenon ..... *Double-Page Engraving*
New Premises, Institution of Civil Engineers, Great George-street, Westminster.—Mr. Charles Barry, F.R.I.B.A., Architect ..... *Double-Page Ink-Photo.*
Masons' Details, Institution of Civil Engineers' Premises.—Mr. Charles Barry, F.R.I.B.A., Architect ..... *Single-Page Photo-Litho.*
Entrance Hall, Moorgate Court, E.C.—Mr. H. Huntly-Gordon, A.R.I.B.A., Architect ..... *Single-Page Photo-Litho.*
North Sea and Baltic Canal { The Bridge at Levensau ..... *Single-Page Ink-Photo.*
{ The Bridge at Grünenthal ..... *Single-Page Ink-Photo.*

Blocks in Text.

Diagrams illustrating Article on the North Sea and Baltic Canal ..... Pages 461, 462 | Sketches illustrating Article on the Parthenon ..... Page 464

CONTENTS.

The North Sea and Baltic Canal 461
The Condition of the Parthenon 463
Notes 464
Congress of French Architects 466
The Durability of a Stained Glass Window 467
The Architectural Association 468
Architectural Association Summer Visits 469
Royal Architectural Museum and Westminster School of Art 469
The Association of Municipal and County Engineers 469
Competitions 470
The East Front of the Parthenon 470
Institution of Civil Engineers 470
Moorgate Court: Entrance Hall 470
Bridges Over the Baltic Canal 470
The London County Council 471
Architectural Societies 471
Books:—C. F. Mitchell's "Building Construction"; J. W. Smith's "A Handy Book on the Law Concerning Owner, Builder and Architect"; B. Fletcher's, W. R. Griffith's & F. W. Pember's, and A. J. David's "The London Building Act" 471
Trade Catalogues 472
Ground Glass as a Builders' Material 472
Insurance of Cement Works 472
Student's Column: Bricks and Terra-cotta.—XXV. 472
General Building News 474
Sanitary and Engineering News 475
Stained Glass and Decoration 475
Foreign and Colonial 475
Miscellaneous 475
Legal 475
Capital and Labour 476
Meetings 476
Recent Patents 477
Some Recent Sales 477
Tenders 479

The North Sea and Baltic Canal.

THE New North Sea-Baltic Canal, though a most important piece of engineering, can perhaps hardly be reckoned among the more remarkable examples of *fin de siècle* construction. The Canal, which is, of course, of great naval importance to Germany, and also has a certain commercial value, no doubt required the careful attention of those responsible for its construction, but no extraordinary talent has been brought into play. There is little of special interest on the route for the civil engineer, excepting in certain details, and general excellence of the workmanship. The architect will, of course, expect still less in a work of this kind, but he will be agreeably surprised to find that the general appearance of the work has not been forgotten, and that the few opportunities given for architectural design have been fairly made use of. From an architect's point of view, therefore, the new waterway compares very favourably with the Suez Canal, or the Manchester Canal, where little or nothing has been done for appearance. The few bridges are an ornament to the new works, the granite masonry of the locks and embankments shows an admirable finish, with a few simple mouldings wherever an opportunity has been given; and there is, we are glad to say, no sign of the hideous stock cast-iron railing and lamp-post generally found on works of this class. The buildings erected for offices, lighthouses, or for the *employés* have also all been carefully designed, and, though of no architectural pretension, are much better than those usually found elsewhere. In one instance the authorities have even allowed some extra expenditure for architectural purposes. This is in the case of the Holtenau Lighthouse, near Kiel, in connexion with which a memorial-hall has been erected, known as the "Three Emperor Hall." This Holtenau lighthouse is the scene of the inauguration of the Canal as we go to press.

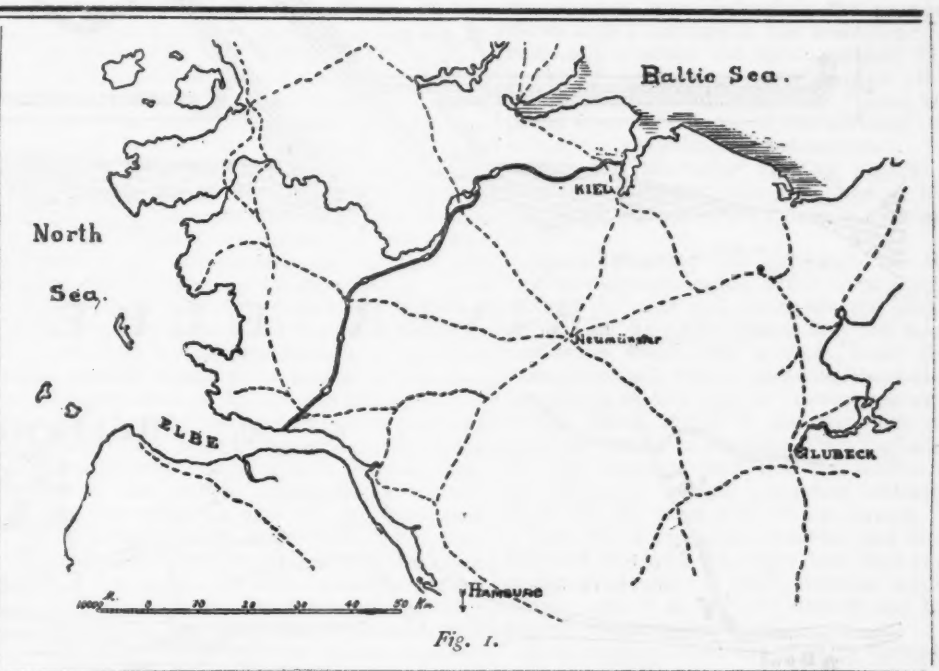


Fig. 1.

The history of the Canal has certainly been interesting, though the actual period of construction, after the final plans had been decided on, did not include any remarkable events, and was perhaps at the most only notable for the rapidity and the businesslike way in which everything was carried out. The history of the Canal almost reaches back five hundred years. Some work done in 1391 and 1398, when the rivers Elbe and Trave were connected by a small canal, was the first part of an ambitious scheme of through-traffic between the Baltic and North Sea. This canal still exists. According to the *Deutsche Bauzeitung*, there was an Alster-Trave Canal in 1525 again, as part of an elaborate plan of through communication. The first practical realisation of this plan was not, however, until 1785, when the Eider Canal was completed by the reigning Danish King, Christian IV. Through traffic between the town of Tönning, on the North Sea, and Kiel on the Baltic Sea, was here obtained by making the River Eider navigable and forming a connexion between an upper reach of this river and the Kiel Fiord. This connexion was the Eider Canal proper, with its elaborate system of locks. Considering the date, the construction of the Eider Canal was indeed remarkable, and seeing that ships up to a length of 100 ft. could use this waterway, it had a certain commercial value. The through traffic of late years reached 4,000 ships per annum.

The new Canal, as actually carried out, is the outcome of a series of modern schemes, the first of which dated from 1848. It would lead too far to give particulars as to the many drawings made between 1848 and the final decision, but we must mention that the most important plans were by "Oberbaurath" Lentze (1864), and "Bauinspector" Boden (1879). Herr Lentze's plans were drawn up in accordance with certain Government requirements, but Herr Boden's scheme was a private commission from a Hamburg merchant, Herr Dahlström, who proposed constructing the canal as a private commercial enterprise. It was practically through Herr Dahlström's energetic initiative after the Franco-German war, that the Prussian Government, and afterwards the German Empire, took the matter in hand from a commercial point of view as well as a military and naval one. Funds, which would otherwise have scarcely been forthcoming for the canal, were very readily voted after due importance had been given to the commercial advantages of the undertaking, and Herr Dahlström's plans served in many ways as a basis for the final working drawings. Prussia, and afterwards Germany, had, of course, long been alive to the military and naval importance of the connection between the Baltic and North Sea, but its value had always been compared with warships and men, and its absence to-day would only give an excuse for further armaments. Herr Dahlström's calculations gave the scheme a different aspect, though pessimists were only too ready to point out

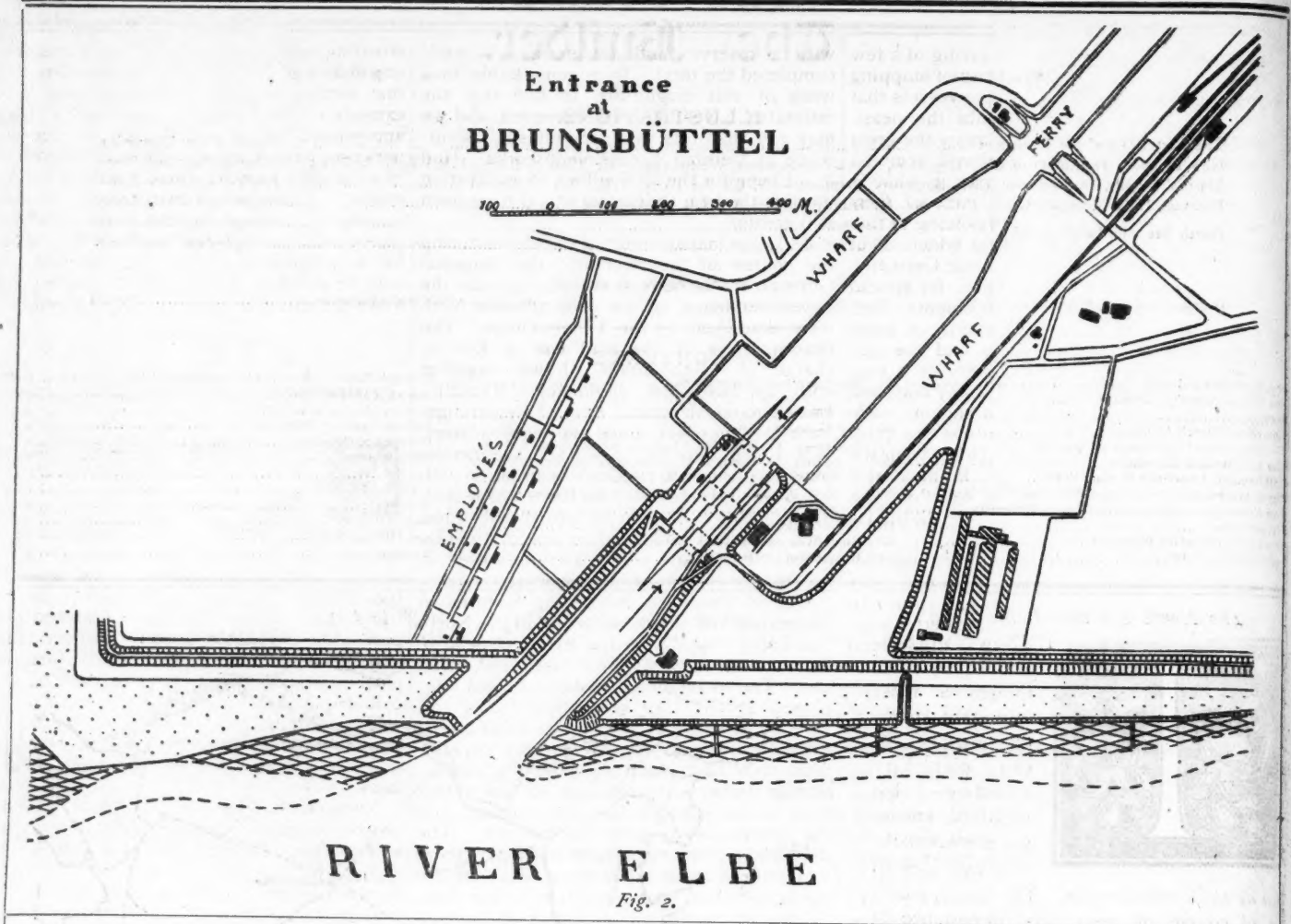


Fig. 2.

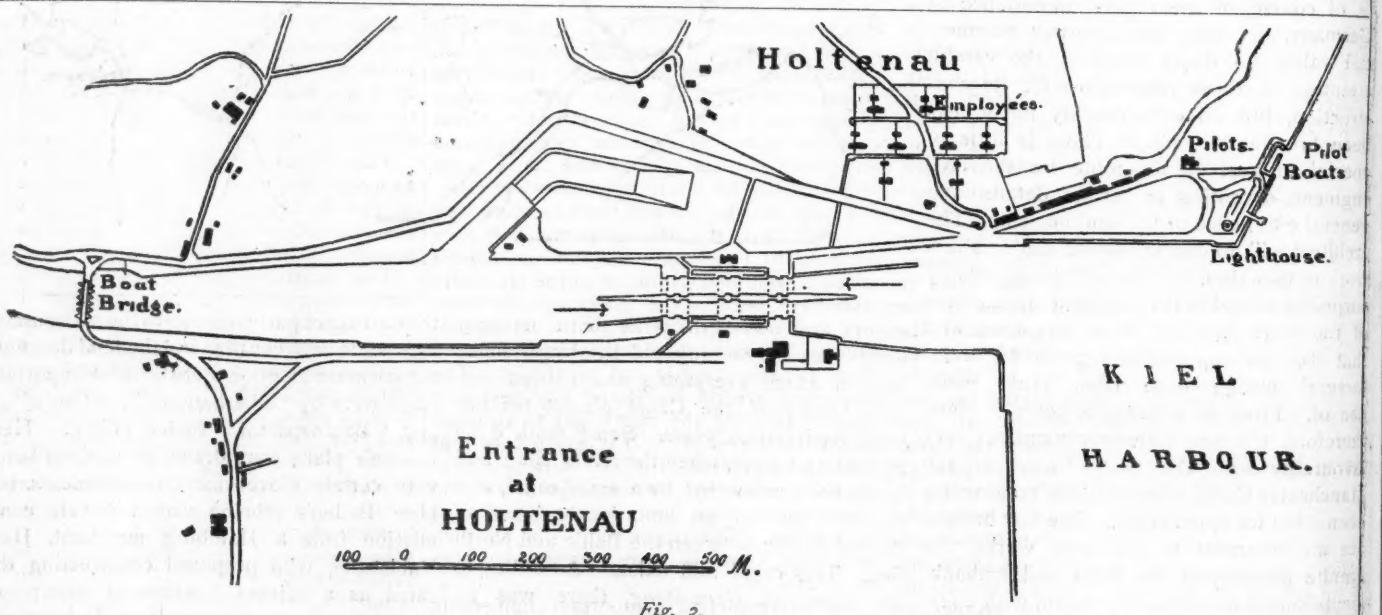


Fig. 3.

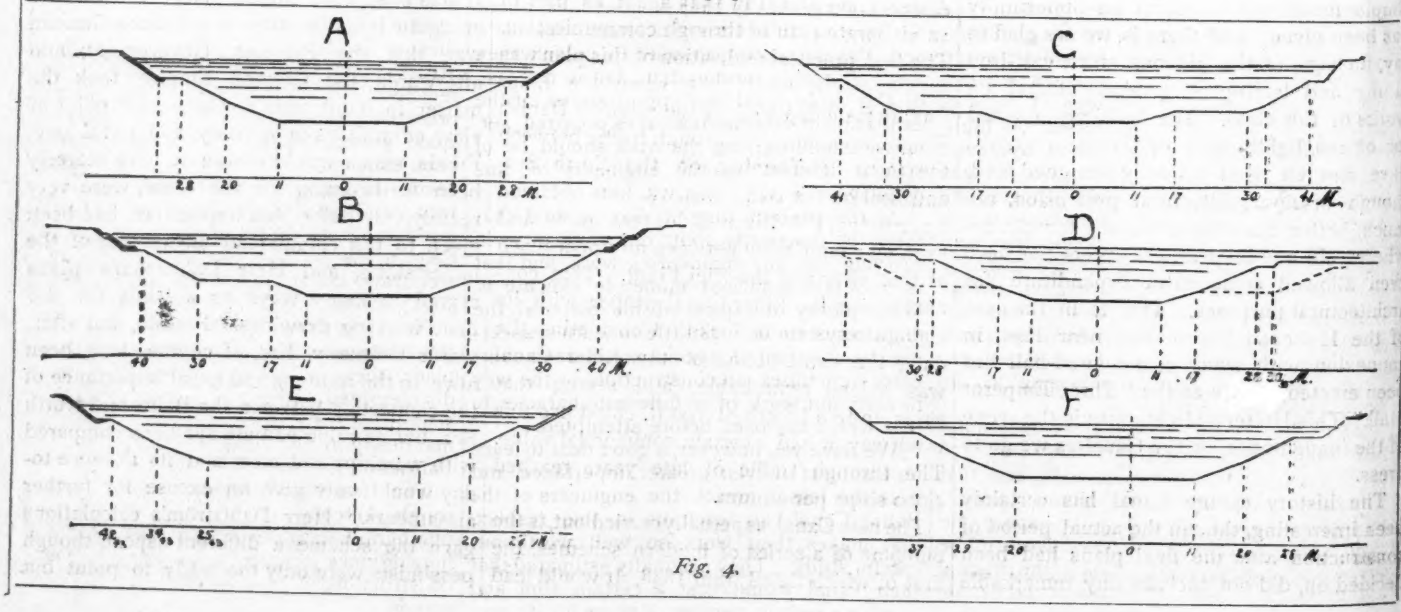


Fig. 4.

that the Canal only meant a saving of a few days and smaller risks for a class of shipping that is very much inferior to the vessels that use the Suez Canal. No doubt the pessimists are partly right, and to many the great international rejoicing at Kiel will seem an anomaly. The world is celebrating what is principally the completion of one of Germany's new armaments, and rejoicing at the completion of an undertaking which is of but small commercial value outside Germany. There can scarcely be any reason for special rejoicing at the technical achievements. But, for all that, the Canal is certainly of some commercial value to its owners, and the outcome of the systematic industry of a very hard-working people, and Germany may well be congratulated on its completion. We may also congratulate ourselves at the completion, as, if any country benefits from the new canal besides Germany, England will be the first to profit from it, together with Sweden. Our traffic with the Baltic is important.

Herr Dahlström's plans of 1879, together with his financial proposals, were under the consideration of the authorities in 1881. In 1886, the Government finally decided to construct the Canal with national funds, and the works were almost immediately taken in hand. The ceremony in connexion with the cutting of the first sod was a most pompous affair, and was the last important ceremonial in which the late Emperor William participated, while the present Emperor, on his accession to the throne, took every opportunity to show his interest in the undertaking.

Although the country through which the Baltic Canal passes is comparatively level, yet a large amount of work was caused by having to divert roads and railways, as well as various streams met with along the route. No locks are needed, except at the extremities of the Canal, but there those which have been constructed are of large size, being 500 ft. long, 85 ft. wide, and 30 ft. deep. The length of the canal is 62 miles, and it is generally 200 ft. wide at the top, 74 ft. at the bottom, and some 28 ft. in depth.

The plan given as Fig. 1 explains the route of the Canal. The planning of the West entrance, on the Elbe, some two miles from Brünsbuttel, is the outcome of much careful consideration, as numerous difficulties in connexion with the tides and current of the Elbe had to be taken account of, whilst the East entrance, in the Kiel Fiord, has the benefit of not being subject to tides or currents. Figs. 2 and 3 show the two entrances with their double locks and inner harbours. Fig. 4 gives sections of the Canal at various points. There are six passing stations, on the route, of sufficient width to allow the easy passage of two vessels. At each end, and midway, there are pilot-stations. Both at Brünsbuttel and Holtenau, there are ample conveniences for loading or unloading, and there will be sheds for the storage of goods. On the Brünsbuttel section the Canal is higher than the surrounding country, whilst soon after the midway pilot-station, towards Holtenau, the waterway runs between steep embankments. The lines of railway which cross the Canal are either on high-level steel bridges or on low-level hydraulic swing-bridges. We illustrate the two bridges at Grünenthal and Levensau (see lithographs). The most difficult piece of excavation was a long reach through a bog. The difficulties here have been overcome by expensive masonry embankments and constant dredging. Everywhere conscientious workmanship, substantial construction, and neat finish are apparent, and there is little fear of the constant expenditure for repairs so harassing to the finances of other canals.

As to the cost of the Canal we may mention that the estimate in 1886 was 156 million marks, or about 7,800,000*l.*, and that there has been a saving of about 35,000*l.*, which sum will, however, be spent on improvements. About 500,000*l.* were to be spent for the ground, according to the original estimate, and 6,000,000*l.* on the actual works. Armament, appliances, stores, &c., together with a reserve fund for extras (75,000*l.*) completed the total. It is remarkable, in a work of this magnitude, to find that the estimates have not been exceeded, and we may add that this is a very unusual occurrence in German Government works. Had it not been for the difficulties of excavation through the bog, the saving would have been still greater.

As to the management of the works during the course of construction, the Imperial Government carried out everything under the superintendence of its own officials, who were employed by the Home Office. The head-quarters of the staff was at Kiel in charge of "Geheimrath" Löwe, together with the two chief engineers, "Baurath" Fülscher and "Baurath" Koch. "Regierungs-Rath" Wennecker acted as legal adviser. MM. Löwe, Fülscher, Koch and Wennecker together formed the special commission with whom the responsibility for the works rested. The Canal was divided up into five sections, each of which had its own special works-office. The length of the sections varied in accordance with local requirements.

One of the most interesting features in connexion with the construction of the North Sea-Baltic Canal was the excellent way in which the workmen were housed and cared for. The maximum number of men employed at one time was about 8,000, and most of these were quartered in comfortable camps, in charge of Government superintendents. Each camp consisted of a number of half-timber barracks, one of which was used as an eating-house and canteen, and the others taken up by dormitories. The dormitories had eight beds each, and there were mostly about ten of these in each block. Each block had accommodation in the form of smaller rooms for a number of foremen and gang-leaders. Each camp had its doctor, a small hostelry and a general goods shop, and a washhouse, a sick-room, and a disinfecting chamber were also provided; and the larger camps had special sanatoriums. Great care was taken to give the men their food and drink at cost price, and there were opportunities for boarding at very low rates. Both the contractors and the men were well satisfied with the arrangements, and it is pleasing to hear that many of the skilled artisans, and also a number of the labourers who have been on the works all the time, are now able to retire with substantial savings, thanks to the opportunities afforded them to live cheaply and be thrifty. The employers greatly facilitated any desire to save by allowing the men's pay to accumulate with interest, &c. It is worth note that these arrangements for the workmen were in the hands of the employers, *i.e.* the Government, and not in the hands of contractors. The experiment—for as such we must class it—was certainly a very successful one.

On the completion of important engineering works we generally hear a good deal about the special difficulties that were met with, and the successful manner in which they were ultimately surmounted; but in the case of this large canal few opportunities for the exhibition of unusual resources occurred, yet, notwithstanding this, the work should be of special interest to the engineers of this country.

At the present time it may be said that there is practically but one difficulty in carrying out any engineering work, and that is, to obtain sufficient money to execute it. With plenty of capital at his disposal the engineer of to-day has little to learn respecting the adoption of special methods to overcome difficulties of construction, or the way to carry out work of a different character to that which has been before attempted.

We have yet, however, a good deal to learn on a subject of even greater importance, and it is the lesson which the engineers of the Baltic Canal can teach us in this respect, that makes their work so well worth our careful study. They originally estimated that their canal would cost a certain sum and require a certain number of years for its construction, and now that the work has been completed, it is found, as already observed, that neither of these estimates have been exceeded. Such a result cannot but be highly appreciated by us, who, with all our experience, have hitherto so lamentably failed in accurately predicting the cost of our large works. Until we learn the lesson here taught us, how can it be expected that the public will be anxious to subscribe capital for an undertaking, the cost of which can only be anticipated by considering how many times the estimate is likely to be exceeded?

THE CONDITION OF THE PARTHENON.

BY MR. SOMERS CLARKE.

EVEN those who have not seen the Parthenon feel an interest in the structure; a building which has always held its own as, perhaps, the greatest wonder of refined perfection amongst all the architectural wonders of the world; and, notwithstanding the grievous blows and buffetings it has undergone, its ruins still possess the most extraordinary power of fascination, partly through sheer majesty, beauty, and refinement of form, and partly from the charm of the material, the colour, the situation, and associations.

That this matchless building stands in imminent danger of ruin, even beyond that which has already befallen it, is but too evident.

Notwithstanding the explosion of the powder-magazine within, which burst out the sides of the cella and overthrew the lateral colonnades, and notwithstanding the bombardments which the western front has undergone, still, from a distance, the building stands up and can be appreciated as a whole, owing chiefly to the fact that the western portico is standing, even including its angle cornices, and that the outline of the pediment is still preserved, although shorn, for the most part, of its cornice.

The fall of the angle cornices and their supports would be the entire and final ruin of the structure: a mere skeleton would remain, and it is at these angles that the greatest danger shows itself.

The construction of the building throughout being purely trabeated, there are in the original scheme no thrusts to counterbalance, no arches trying for ever to overthrow their abutments. On the other hand, when stone beams are broken through, they have the trick of acting after the manner of arches, and may often be found to have sunk, until, whilst the crack gapes at the bottom, the two faces of the break are in violent pressure at the top, and the species of arch thus formed is only kept in its place by the resistance of the adjoining masonry—in fact, thrust is established, and that in a structure where the resistance to thrust forms no part of the original design.

The Pentelic marble, of which the Parthenon is built, was selected with the greatest care, any but the best blocks being rejected. The material is splendidly preserved, but after the lapse of more than 2,000 years, during which the marble has been exposed in the building, disintegration seems to be, in parts at least, making its way; and once begun, it may be making rapid progress, only, perhaps, to be made clear to us by the sudden collapse of an architrave under some unwonted, although slight, strain.

Since casts were taken, at the beginning of this century, of some sculptures still in their place, these sculptures have considerably disintegrated. What is going on with the sculptured surfaces is probably going on less manifestly in the great blocks of which the Parthenon is built.

The following notes, accompanied by rough sketches and by a reproduction of a photograph (see separate plate), will, it is hoped, make clear, to those acquainted with construction, in how great peril the Temple stands.

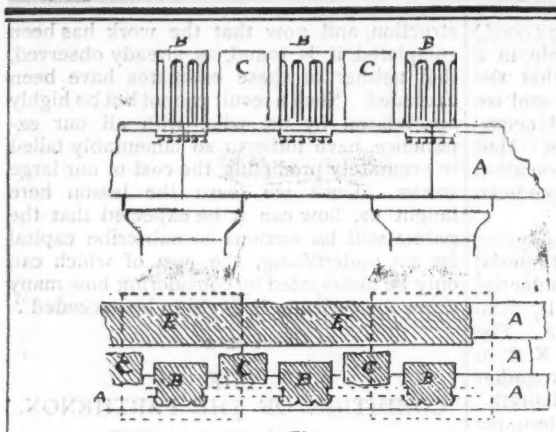


Fig. 1.

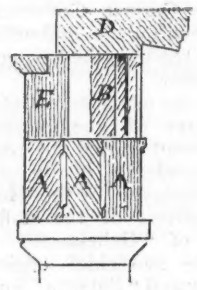


Fig. 2.

The sketch diagrams are not to scale, and are only carried as far as is necessary to assist in explaining what has to be said. The beautiful and careful drawings published by Mr. Penrose, in his "Principles of Athenian Architecture," show, much better than I can do, the methods of construction adopted in the Parthenon; but for those who may not have the book at hand, the rough sketches Figs. 1 and 2 may be of use.

By these it is seen that the architrave is built up of three large slabs, set on edge side by side, and having very ample support at the ends on the capitals of the columns. The vertical joints of these slabs are hollow. The slabs are only in contact for a few inches at the top and bottom, and there nothing can exceed the care with which the joints are made. These slabs are lettered A, A, A. Upon these slabs rest the triglyphs, B, B. The triglyphs are very large blocks, and rest partly on the outer and partly on the middle slabs, A, of the architrave. The sides of the triglyph blocks are grooved to receive the slabs of which the metopes are formed. Behind these slabs are placed blocks of marble, which stand quite free. The purpose of these blocks was clearly to assist in carrying the great cornice stones, and at the same time to do this with much less material than would have been used had the work at this level been all in the solid. The weight on the architrave stones is, by this expedient, considerably reduced. Behind the blocks B and C is a continuous wall E, which rests partly on the middle and chiefly on the inner architrave slabs A, A. This wall carried the stone roof of the peristyle.

The Section Fig. 2 shows that where the cornice still remains the greatest weight is now on the outer stone of the architrave, and the tendency is to fall outward.

At the angles of the temple this outward tendency is very much increased. The triglyph is in these cases a huge solid block, larger and heavier than the triglyphs elsewhere; the cornice overhangs very far, and on its edge lies the sloping mass, at the start of the pediment cornice. As long as everything was in good order these great weights were no doubt counterpoised; but now, with the architraves more or less shattered, the pediments and the magnificent stones of the capitals broken, it seems only wonderful that the slightest earthquake shock does not overthrow the angles.

The sketches Figs. 3, 4, 5, and 6, in conjunction with the photograph, show the excessive danger to which the slightest shock exposes the temple.

Fig. 3 shows the north-west angle of the

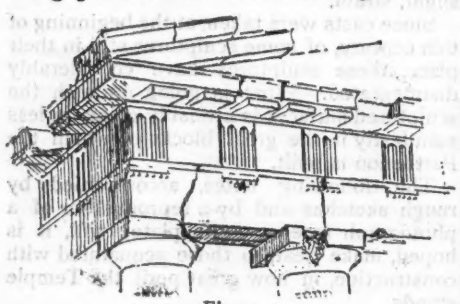


Fig. 3.

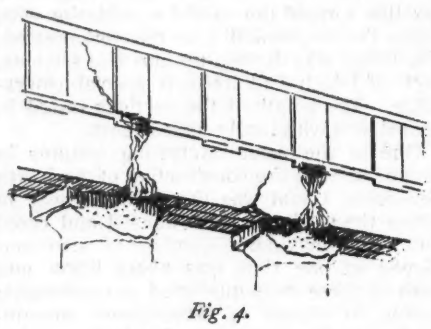


Fig. 4.

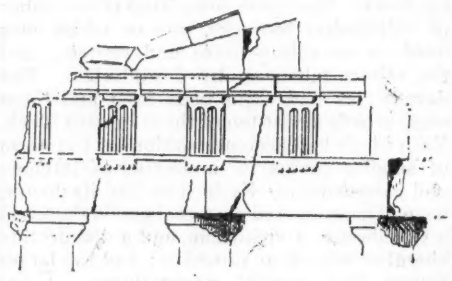


Fig. 5.

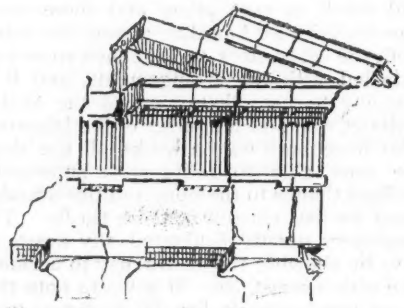


Fig. 6.

west portico. The outer stone of the architrave is cracked through, consequently the great block of the angle triglyph is standing on a very insecure base, and on this block rests the cornice. The abacus and part of the echinus of the angle capital are gone, whilst the capital of the next column southward is broken. The outward stone of the architrave has therefore a poor base. In its fall it would almost certainly heave up the work above it—indeed, the open joints of the masonry at this angle show that there is a slight tendency outward.

Fig. 4 shows the capitals of the fourth and fifth columns of the western portico with the architraves resting upon them. The danger which threatens the outside architrave stones of the third, fourth, and fifth inter-columniations cannot be over-estimated. The capitals of the fourth and fifth columns have their face completely broken away. In consequence, nearly all the support of the outer slab of the architrave, except a very few inches, is gone. The vertical joints of the architrave slabs are hopelessly shattered, and there is an ugly crack developing itself in the architrave of the middle inter-columniation. It seems that these stones are kept in their places solely by the weight of the triglyphs, &c., above tying them back, and by the wrought-iron cramps with which nearly every block of masonry in the temple is tied to its neighbour.

The S.W. angle of the western portico is in equal danger with that at the N.W.

Fig. 5 shows the south-east angle of the east portico. Here we see the lamentable result of the fall of the cornice. The outline of the temple is entirely lost. The cracks and breaks in the masonry make it evident that, although the great mass of the angle cornice has fallen, there is still a considerable tendency to move outward.

The angle shown on Fig. 6 at the north-east corner of the east portico is perhaps in greater danger than is any other part of the peristyle. Here the abacus and part of the echinus of the capital are gone. The outer architrave stone is cracked in two places. Upon the outer piece which stands out in the air rests much of the great weight of the triglyph, and over this, much shattered, lie the cornice and the first stones of the pediment. As we look at it we only wonder why it does not fall at any moment.

Not only are the outer stones of the architrave broken as above stated, but many of those behind them are in a very precarious state. The insertion of new stones would be not only a thing difficult in itself, but one which would be most fatal to the marvellous effect of colour the ruin now presents to us. Pentelic marble is of a cold sugary white when fresh cut, and takes very many years to mellow. It is beyond question that a great deal may be done with bronze tie-rods, which would be almost, if not quite, invisible.

We cannot too strongly deprecate anything in the way of "restoration," and the insertion of new stones comes very near to this.

SOMERS CLARKE.

NOTES.

WE may congratulate the authorities of Durham Cathedral on the completion of a piece of "restoration," against which not even the most bigoted anti-restorers can bring any reasonable objection, viz., the completion of the rebuilding of the eastern portion of the Chapter-house, which, as mentioned in our article and shown in our plan of Durham Cathedral in the *Builder* of June 3, 1893, was wantonly destroyed in 1796, under the orders of the notorious Wyatt, for reasons (whatever they were) which it is difficult to comprehend even from the Wyatt point of view. The reason we call it a justifiable restoration is that the Western portion of the Norman Chapter-house remained, and therefore the restoration of the destroyed portion was rightly carried out in harmony with the style of the existing portion, as a completion of an architectural design which had been partially destroyed. Had the whole ancient Chapter-house been effaced, and a new one required, we should have objected to the building of an imitation Norman one because the destroyed one was Norman. It is a different thing when half a building or apartment is destroyed; the question of architectural design then comes in, and the new work ought to be restored so as to complete the design. This is a distinction often lost sight of by opponents of restoration, and we may take the opportunity of drawing attention to it again in reference to this case.

THE equestrian statue of Lord Strathnairn, near Albert Gate, which was unveiled on Wednesday, shows a certain degree of originality and special character in the treatment both of figure and pedestal. A considerable amount of gilding is introduced in the accoutrements both of horse and man, which, though it may be objected to as too realistic, certainly gives a better decorative effect, in London atmosphere, than a bronze statue in its ordinary state. The pedestal is treated with six small Corinthian columns, disengaged, but placed in angle nooks and in front of a recess in the centre of each side, so as to throw out the column in front of a shadow. The effect

of this is good, but the mouldings both of the upper pedestal and the base are rather coarse, and we should doubt if the architect's hand had been in them. In regard to proportion, the pedestal and statue group very well when seen from a little way in front, but for a side view, which is the one for an equestrian statue, the pedestal is too high for the width of the site, and throws the statue above the eye too much. The horse is possibly a little stiff in attitude, but is sculpturesque in character, and the figure of the rider dignified. The sculptor is Mr. Onslow Ford; whether he is responsible for the pedestal also we have not heard.

THE terms on which the County Council obtains the business of the London water companies, if Parliament decides that the County Council shall become the public water authority, is a matter which chiefly interests the shareholders in the companies. The decision of the Committee last week to allow the arbitrator who may have to settle the amount of the purchase money full discretion to take all matters into consideration is therefore, though of importance to the companies, not a matter of great public interest. From a public point of view it is chiefly of importance as showing that the Committee consider that the County Council have made out a *primâ facie* case for their contention that this body should be the authority to manage the water-supply of London. The great point in dispute is now the adverse contention of bodies outside the actual jurisdiction of the County Council that the latter ought not to control the water-supply. If the companies are to be bought out, it is immaterial to them who are the purchasers, and therefore for the present the contest lies between the County Council and public bodies outside the area of the Council.

THE case of Chastey *v.* Ackland, reported in another column, finally disposes of the phrase "the right to light and air." It does so for the good reason that it decides that there is no right in the owner of premises to the uninterrupted flow of air to those premises. The claim is too indefinite; the air is at large, and not within finite limits, and the claim is thus essentially different to one for light, which must come through a definite and well-known aperture. The interruption to the flow of air is, in truth, on the same footing as the interruption of a view: it is an inconvenience, and not a legal wrong. The air may be interrupted so that the premises are less "fresh" than they were, but that is a drawback which must be borne by all dwellers in towns. In fact, if a right to an uninterrupted flow of air existed, it would nearly put an end to towns altogether. Again, too, the case of an interruption of the flow of air differs from the fouling of the air, as by noxious vapours which are borne to a house. This is an active nuisance and a breach of the law. The recently-decided case, though it could have but one termination in the minds of those acquainted with this branch of the law, will do good by putting an end to what is still, to some extent, a popular fallacy.

THE recently-reported case of Lavy *v.* the London County Council is not without instruction, though it must not be regarded as a very binding decision, since it practically rests on a question of fact and not of law. The appellant erected a wall 11 ft. high, 14 in. thick, and this was to be used as an advertising station. It was contended by the County Council that this was a "building structure or erection" within the meaning of Section 75 of the Metropolis Local Management Act, 1862. The magistrate held that this wall fell within this section, and ordered its demolition, as being beyond the general line of buildings. Against this decision the owners of the wall appealed, and the Court upheld the decision of the magistrate. The judges considered it to be a question of fact whether this wall was a building structure or not, and as the magistrate had found it was, they would not disturb his finding, since it did not appear to be unreasonable. It is obvious, therefore, that this case is a guide to the discretion of a magistrate or of anyone interested in a similar building, though, as we have said, it is not a decision on a legal principle.

THE question of the use of stencilled decoration has been again prominently brought forward by Mr. Arthur Silver in conjunction with Messrs. Rottman & Co., of Garlick Hill. Stencilling is handwork rendered expeditious, and, therefore, more economical by certain mechanical appliances, which take the name of stencil-plates. In these, as was the case with the "leading" of stained-glass, it was the custom to hide the "ties" as far as possible, whereas Mr. Silver, in the designs on view, has shown that these are of no less value from an artist's point of view than they needs must be from that of a mechanic. This direct and obvious treatment was not popular in the early part of the century, when to approach the pictorial as nearly as possible was the ideal, and to disguise the means employed was considered a laudable achievement. Even during the Gothic revival, the ties of the stencil-plate were invariably painted out so as to imitate handwork. The designs by Mr. Silver, which can be laid on to any substance, from flax, through canvas, and down to wood, are in many respects admirably adapted to the purpose, and the figure-work especially has a decorative value. Another point is that a graduated wash, which is the distinctly "hand-worked" quality of a stencil, is used with good effect, so that a frieze, for example, by the gradation of colour, loses the wearying effect of repetition and becomes an engaging series of decorative panels, full of colour graduating from reds through blues to yellows and back to reds. Beyond the variation in colour, however, it is evident that, built up as they are from many plates, it is easy to combine the various parts in quite new ways, as in one of the designs in which a frieze of bold floral forms has groups of figures introduced here and there in positions where they give an architectural emphasis or importance in a room. It would seem, then, that from a study of these first specimens, that a notable departure in the embellishment of our walls has been initiated, and that stencilling, in which the graduated wash of colour and the acceptance of the structural ties as essentials of the design, may be placed midway between the cheaper wall-papers and the costly fresco.

TWO architects whose names are known to our readers, Mr. E. Guy Dawber and Mr. Langton Dennis, are conjointly engaged on a work on "Old English and Continental Pewter," a subject in which architects and artists are a good deal interested just now. They will be very glad to receive any information concerning fine specimens of pewter-work, especially such as are in private collections. Rubbings of marks would be also welcome. Any communications on the subject can be addressed to Mr. Langton Dennis, at 22, Buckingham-street, Strand.

THE draft regulations for securing the safety of the public recently issued by the Board of Trade to central station engineers and others are meeting with more opposition than they deserve from electricians. The primary object of the Board of Trade is to adequately protect the public, and although the regulations may slightly hamper the development of electricity supply, yet various accidents in the past are responsible for this. The rules which are being most discussed are two of those relating to arc-lighting; the rapid spread of this kind of lighting, due to the introduction of small arc-lamps, naturally interests a great many people in regulations affecting them. The draft rules are—

"47. All arc-lamps shall be so guarded as to prevent pieces of ignited carbon or broken glass falling from them, and shall not be used in situations where there is any danger of explosive dust or gas.

48. Arc-lamps used in any street shall be so fixed as not to be in any part at a less height than 10 ft. from the ground."

The objection to the first rule is founded on the mistaken assumption that it forbids the use of arc lamps and gas in the same building, an interpretation, we imagine, not contemplated by the Board of Trade. The objection to the second rule is more serious, as it undoubtedly handicaps unfairly arc-lighting in this respect, as compared with gas and oil-lighting. Indeed, if it is to be enforced, it will make arc-lighting of shop exteriors, &c., virtually impossible in some streets. One could understand the rule if arc lamps were all of dazzling brilliancy, but small arc lamps are often of only 200 candle-power, and when surrounded by a good diffusing globe give a most pleasant light. There is no doubt of the great superiority of those small arc-lamps over large glow-lamps of the same nominal candle-power, both as regards economy and efficiency. As people who have used both find out, "you get double the light at a quarter of the cost." The other draft rules at present under the consideration of the Board of Trade are well fitted to ensure to the public a proper and sufficient supply of electrical energy, and at the same time, to secure the public safety.

IN another column we print a letter from a correspondent who suggests that crushed or ground glass might be utilised as builders' sand. He states that a large quantity of black and other glass may be obtained in London for the cost of cartage, and that the expense of grinding it is very small. The suggestion is not altogether novel. In the United States the refuse from glass works is sometimes used both for mortar and cement, though we believe its employment is very restricted. In Germany and Switzerland various proposals have been put forward, from time to time, to employ glass refuse for building purposes, but they do not seem to have come to much, for reasons that will presently be seen. There can be no question as to ground or crushed glass being suitable for mortar; judging from the sample sent us, the small fragments are angulate, and, from the mechanical point of view, they leave nothing to be desired. From the chemical standpoint also, there is practically nothing detrimental in the material, though it cannot be quite as durable as pure quartzose sand. The chemical composition of black bottle glass varies exceedingly within certain limits, but it may generally be regarded as being from 50 to 65 per cent. of silica, 20 to 25 of lime, 6 to 9 of potash or soda, and from 4 to 7 of iron—depending on the manufacturer and the class of bottle. Ordinary bottles would have about 54 per cent. silica, 20 of lime, &c. In any case, large proportions of lime, soda, and potash are present, though the bulk of the glass is silica. From the state in which these ingredients exist in the glass, there is very little likelihood of their being able to materially influence the action of the mortar in any way. We cannot see, therefore, why glass sand should not be employed in the manner suggested; it would be purely a question of cost. The reason it has not been adopted to any extent abroad—and this is a point for our correspondent to note—is because with but very little preparation it makes a good brick for use in chemical works, as the material is so little attacked by acids. Bricks thus produced have a specific gravity of only 1·5, and are very strong though somewhat brittle. A glass brick in the shape of a flask has been manufactured in Switzerland for some years; and slag-bricks are well-known. We have often wondered why the Thanet Sand and the Lower Greensand in the neighbourhood of London have not been extensively employed for making fire-bricks; glass-sand mixed in proper proportions therewith would form an excellent flux.

WE have received from the Master of Downing College, Cambridge, an account of the objects of the "National Home Reading Union," and a sketch of its work, as planned for this summer and autumn, a good deal of which is, of course, out of our special province; but we are glad to notice that the prospectus includes the practical study of geography and of the physical features of different portions of the country which are to be visited. To direct the attention of excursionists, under competent guidance (which appears to be provided for), to the physical features of the country they travel over, is a very useful work, and may draw the attention of many to sources of interest in travel which are too much neglected.

BENTLEY PRIORY, between Stanmore and Harrow, is to be offered for sale by auction next week. It stands on the site of a priory whose revenues were enjoyed, at the time of the Suppression, by the monks of Lanfranc's Hospital, or Priory, of St. Gregory, Canterbury, and were given in exchange by Cranmer to the King in 1543. The property was acquired by James Duberly, an army clothier and contractor, who rebuilt the house, Soane being his architect. In 1790 he sold it to James, first Marquess of Abercorn, who made large additions to the residence. Here were collected a valuable set of paintings by the old masters, with several portraits of the Hamilton family, and some choice examples of Sir Thomas Lawrence. During the latter part of George III.'s reign, Bentley Priory formed the scene of many fashionable and celebrated gatherings — its visitors including Sir William Hamilton and Emma, his wife, Pitt, Canning, Scott, Rogers, Lord Aberdeen, Lord Liverpool, and the Duke of Wellington—which made it what we may most readily describe as the Holland House of the Tory Party. It is said that some portions of "Marmion" and the "Pleasures of Memory" were written, or, at any rate, revised, here. The second Marquess and first Duke of Abercorn lived at the Priory, 1832-40, and there Landseer painted his famous portrait-group. In March, 1848, a lease was taken by Queen Adelaide, who died there in December, 1849. Four or five years afterwards, Sir John Kelk, the contractor, purchased the estate, which now extends over 300 acres, and rises to about 500 ft. above the sea-level. Hill House, or the Hill, near North End, Hampstead, which will be offered for sale on Tuesday, also, is notable as having been the home of the late John Gurney Hoare, the banker and philanthropist, to whose strenuous efforts in past years, when bits of the heath were being "granted" away, the public at this day are largely indebted for the movement which resulted in its purchase by the late Metropolitan Board of Works. The house lies by the ancient road to Hendon; the grounds slope down to the west portion of the heath. A plot of ground, in front of his own gates, was secured by Mr. Gurney Hoare in order that it might remain free from buildings, and serve, with his leave, for cricket matches and the like. That plot, about one and one-quarter acre, is covered, it seems, by the projected sale. Grave apprehensions exist that if it is thus sold, with the remainder of the property, which is freehold, his intentions will be frustrated. The London County Council should see to this matter.*

WE learn from Mr. Sekon, the author of the "History of the Great Western Railway," lately reviewed in our columns, that he has come across some interesting specimens of railway carriages of very early date; two open passenger carriages, running on cast-iron wheels, built in 1834, for the Bodmin and Wadebridge railway. These specimens of primitive railway carriages have been removed to the Eastleigh carriage works for preservation. Mr. Sekon suggests that a museum should be formed of examples of carriages and engines of early date, and railway machinery of other kinds, as a record of the early progress of railways in this country. Such a collection would be an interesting memorial of the most remarkable and rapid development in locomotion which has ever taken place in the history of man.

THE Institute of Painters in Water-Colours has opened what is really, as it is called, an exhibition of "Sketches and Studies" by its members; exhibitions of so-called "Sketches and Studies" being often indistinguishable from those which do not profess to be limited to that order of work. The contents are of very various value, *i.e.*, a good many of them are not of much interest, but there are enough good sketches to make the exhibition worth a visit. Among these may be specially mentioned those by Mr. Towneley Green, especially "Sunrise" and "Moonrise" (159, 160); some broadly-handled sketches by Mr. Huson, including one of "Evening Sky" (72); others by Mr. Frank Walton, Mr. Cotman (a very interesting set), Mr. Wimperis, whose "Broxton, Cheshire" (239), is particularly fine; Mr. Aumonier; Mr. C. E. Johnson; Mr. Fulleylove, whose collection of architectural sketches, however, hardly does justice to the artist, except "Hampton Court from the Long Water" (353); Mr. Orrock; Mr. C. Green, who sends studies of military figures, &c. Sir James Linton's head of a lady under the title of "Cynthia" (303), is a finished picture, and a good one, with more character in the head than he sometimes affords us. A view of Ely Cathedral, from a point from which it is not often drawn, is one of Mr. Cotman's contributions. The majority of the works of each artist are grouped together—the best arrangement for a sketch exhibition, in which one can thus study each artist's means of producing effect in slight and rapid works.

THE Society of Arts gave a conversazione at the South Kensington Museum, on Wednesday evening, which was largely attended. The visitors were received by General Donnelly. There was no want of entertainments: the band of the Royal Artillery in one court, another band in another court, glee-singing (very good) in the lecture theatre, &c. Nevertheless, we should recommend the Society of Arts, on another occasion, to aim at a conversazione which should present something of interest in the way of exhibitions of inventions, materials, &c., specially related to the objects of the Society. Merely to engage the South Kensington Museum for the evening is a form of entertainment having no relation to the special character of the Society of Arts, and we should suggest that a new departure might be made another year. While referring to South Kensington Museum, we cannot help asking how long the lecture theatre, in which one of the entertainments took place, is to be left with its semi-dome in that mean and disreputable state, waiting for a design made, we believe, many years ago, and never carried out yet. If the idea of carrying it out is abandoned, surely it would be better to admit this, and to finish or decorate the semi-dome in some simple manner, rather than leave it in its present unsightly condition.

THE Hellenic Society, which held its annual meeting on Monday last, under the presidency of Professor Lewis Campbell, has made the usual grant of £100 to the British School at Athens, and it was announced also that a decided effort was to be made to put the school on a secure financial footing. This, we presume, means an appeal for State aid, which it is to be hoped will not be made in vain. It is utterly discreditable that, while the archæological establishments of other countries at Athens are well-supported by public funds, our own school should be left without assistance of any kind from the Government of this country.

CONGRESS OF FRENCH ARCHITECTS.

THIS year, as well as last year, the congress of French architects has held its meeting, for the most part at least, away from Paris. Bordeaux, the headquarters of the important Architectural Society of Bordeaux and South-Western France, was the city selected for the meeting at once of the sixth general assembly of the Provincial Association and for the twenty-third Congress of French architects; the city offering this year the additional attraction of an important exhibition, "universal" in character in respect of some of its sections, and organised by the "Société d'Enseignement et d'Economie Sociale," founded in 1808, and called otherwise the "Société Philomathique."

The General Meeting of the Association of Provincial Architects held four meetings, from Friday the 7th to Monday the 10th of June, meetings attended by about sixty delegates from the twenty societies included in the Association, which numbers 525 architects representing fifty-two departments.

The following subjects were discussed at these meetings:—

Architectural education in the provinces;

The selection or distinction of those who had a proper claim to the title of "architect";

Public competitions;

Professional duties of architects;

Organisation of departmental and communal work.

These questions, however, were to be brought up again and treated more fully at the meetings of the Congress of French architects.

The visits to the Exhibition and to various architectural monuments of Bordeaux were also made by the members of the Provincial Congress and of the Congress of French architects conjointly. Of these more hereafter. The delegates to the Provincial Congress had also made, before the arrival of the Paris contingent, a nautical excursion on the Garonne, the course of which they followed from Bordeaux to Saint-Macaire; stopping at Langoiran to visit the ruins of the château and the ancient Romanesque church, as well as the new church, built in the Transitional style by M. Abadie *fils*; at Rions, a small and little-known town, the fortification walls of which are worth attention; at Cadillac, where there is an ancient church with a one-aisled nave, and a château of the sixteenth century built by the Duc d'Epernon, with fine façades and admirable chimney designs; lastly, at Saint-Macaire, a town of almost Roman appearance, with a Romanesque church of St. Sauveur, decorated with interesting mural paintings, as also remains of the ancient fortifications, houses of the thirteenth, fourteenth, and sixteenth centuries, and a small "Place" still surrounded with its original arcaded cloisters.

The Provincial Association terminated its sixth general meeting by appointing its list of officers for 1895-6, of which M. Journoud, of Lyons, President since the foundation of the Association, was elected Honorary President, and M. Ernest Paugoy, of Marseilles, General Secretary, was elected President; by distributing six medals to building artisans of Bordeaux for meritorious work or for length of service; and lastly, at the meeting of June 10, by giving a welcome to the members of Congress who had come from Paris, by way of Angers, under the guidance of M. Achille Hermant and M. E. Corroyer, Vice-Presidents of the "Société Centrale des Architectes Français."

The excursion of the latter to Angers, on the way to Bordeaux, occupied three days. Leaving Paris on Saturday, the 8th, at 11 a.m., the members of the Congress were met at Angers by the members of the Society of Architects of Anjou. The morning of Sunday, the 9th, was occupied by visits to two important industrial establishments, a saw-mill and a wire manufactory, situated near the gates of the city, and by an excursion to the Angers slate-quarries. These latter proved very interesting, especially in regard to the size of the blocks quarried, in some cases six mètres by three, the cutting of the blocks by a specially-made form of circular saws worked by hand, the planing by means of travelling carriages furnished with cutters and working by a rotatory movement, the polishing of slate slabs by marble masons, the cutting up of slabs into roofing sizes by bands of workmen, or often by a workman and his family and friends working

* We read (since the above was in type) that Mr. S. Hoare, M.P., has withdrawn the paddock from the sale.

under his direction, the descent of 100 mètres into the quarries, and the process of blasting by electricity—all these proved sources of great interest, as well as the Beaulieu wine and the champagne produced, in the depths of the quarries, to do honour to the visitors.

At 3 p.m. there was a visit to the Hôtel de Ville of Angers, formerly the "College d'Anjou," dating from the end of the seventeenth century, and to the local exhibition ("Exposition regionale"), which included a brilliant fine-art section; thence to the Logis Pincé, converted, under the superintendence of M. Lucien Magne, into a museum of architectural designs and drawings left to the town of Angers by M. Edouard Moll, a native of the place. Thence the visitors repaired to the Bishop's Palace, which contains a Synod-hall of the eleventh century, 20 mètres long by 10 wide, and now reached by a staircase of the Early Renaissance period, and finally to the cathedral of St. Maurice, which contains work of the twelfth, thirteenth, and sixteenth centuries; a building of great simplicity of plan but of noble proportions, and including among its treasures some fine glass-work and tapestry.

After the visit to the cathedral, the members of the Congress met again at the "Vieux Château," built by St. Louis, with numerous towers built entirely of slate, whence a fine view of the town and the valley of the Maine was obtained. In the evening there was a banquet, presided over by M. Corroyer, at the close of which medals struck in commemoration of the meeting were presented to several artizans from the slate quarries.

On Monday, the 10th, visits were made to the church of Saint-Serge; to the Saint-Jean Museum, installed in the three-aisled building of the ancient Hôtel-Dieu or Hôpital Saint-Jean, a hall 60 mètres long by 22½ wide, near which is the square chapel, vaulted on two internal columns. Subsequently visits were made to the Church of the Trinity, a building of the eleventh century with a one-aisled nave, formerly connected with the Abbey of Ronceray; to the "Logis Barrault," a mansion of the end of the eleventh century, in which are now collected a number of sculptures and models by David d'Angers, among them a model, of one-third size, for the pediment of the Panthéon; and to the Hôtel de Prefecture, formerly the Abbey of St. Aubin, re-built at the close of the seventeenth century. In the evening the party left by train for Bordeaux.

On Tuesday morning, the 11th, at 8.30, proceedings were opened by an address from M. Marius Faget, President of the Architectural Society of Bordeaux, followed by another from M. Achille Hermant, who acted as President of the Congress in the unavoidable absence of M. Ch. Garnier, and by a statement of the business and the visits arranged by M. Roux, Secretary of the Société Centrale.

At ten, there was a visit to the Exhibition, under the direction of M. Hausser, President of the Société Philomathique, with a paper on it by that gentleman, responded to by M. Hermant; and at one, a visit to the Grand Théâtre, with a paper on it by M. Marius Faget, who restored it in 1880.

At half-past three the serious work of the Congress commenced, under the presidency of M. Ernest Paugoy. M. Boileau, Assistant-Secretary of the Société Centrale, gave a statement of the actual state of the subject of architectural education in the provinces, and the arrangements made for the formation of a committee of study, adopted in principle at the meeting at Lyons last year. This committee will be formed thus: each provincial society will furnish from one to six delegates, according as its numbers range—from 25 to over 400; this will provide about sixty members, of whom twenty-five will be elected by societies having their head-quarters at Paris, viz.: the Société Centrale, the Caisse de Défense Mutuelle, the Société des Architectes Diplomés, the Union Syndicate, and the Société Nationale; the other thirty-five being nominated by provincial societies.

In the discussion of the main subject, carried on by M. de Vesly, of Rouen, M. A. Gosset, of Reims, M. Faget, of Bordeaux, M. Boileau, of Paris, and some others, the principal interest of the meeting was concentrated on the communications received from M. Labbé, Professor of Architecture at the École des Beaux-Arts of Bordeaux, the scope of which may be thus summarised:—

The education of architects in the provinces should be carried out in connexion with the already existing art-schools.

The State should have a certain control over the system of instruction, but not absolutely dictate it.

General annual competitions would furnish a means of comparing the results obtained in different art-schools, and at the same time of exciting the emulation of architectural students.

The pupils of the various schools should not enter the National École des Beaux-Arts, except as the result of a special examination.

The pupils, both of the Provincial schools and of the upper class in the Ecole Nationale, should receive a certificate when they have successfully passed the final examination.

There should be a distinction between the pupils certificated by the Provincial schools and those certificated by the Ecole Nationale; the latter preserving the prestige given by the certificate of the higher institution.

It may be observed here, that the adoption and putting in force of these proposals by the Government would give, in a few years, in addition to the list of architects who have passed the examinations for Diocesan Surveyorships and for the Monuments Historiques, the following three main classes of French architects:—

1. Architects who have obtained the Grand Prix at the Ecole Nationale des Beaux-Arts.
2. Architects who have obtained the diploma of the Ecole Nationale des Beaux-Arts.
3. Architects certificated by the Ecole Nationale or by one of the Provincial Schools.

This is without counting the pupils who have obtained certificates at the "Ecole Spéciale d'Architecture" presided over by M. Trélat (an institution of much the same type as the provincial schools), and the pupils who have received a diploma or certificate in construction from the Ecole Centrale des Arts et Manufactures of Paris.

The day's proceedings were closed by a paper read by M. Germain Bapst, of Paris, under the auspices of the Société Philomathique, on "The Decorative Arts," in which the author recommended the study of nature, the avoidance of realistic copying, the development of the individual taste and manner of the artist, and the modification of existing styles in accordance with modern requirements.

[The report of the remainder of the proceedings arrived too late for insertion this week.]

THE DURABILITY OF A STAINED-GLASS WINDOW.

THE extent to which a body will be affected by the destroying agencies of time and exposure will depend upon two conditions—first, the degree of intensity of chemical combination between its elements; and, second, the possibility of the formation of more stable compounds by the combination of one or more of these elements with those other elements by which it may be naturally surrounded. Thus, in the instance of metallic iron exposed to damp air, the coating of oxide is formed because it is a more stable substance under these conditions than the iron itself. We must strive, therefore, in endeavouring to make a body permanent, to so arrange its elements that compounds may be formed more stable than it would be possible to effect by any other combination.

In the case of a painted window, the elements composing it and the disintegrating influences by which it is surrounded being known, it is comparatively easy to point out the manner in which it will be acted upon in the course of time, and although, of course, absolute imperishability is not attainable, an intelligent understanding of these causes of decay should at least enable the glass-painter to produce the maximum degree of durability possible under the circumstances.

The operations of glass-painting really consist in establishing upon the surface of the glass layers of an opaque substance (usually oxide of iron) in varying degrees of thickness, thereby producing proportionate variations of light and shade. The iron oxide, before application, is intimately mixed with a fusible flux, which, melting at a temperature only sufficient to raise the glass to a red heat, holds the opaque particles of oxide together and binds them firmly to the surface of the glass. Now it is this low degree of fusibility of the colour-flux that constitutes the weakness, from the point of view of permanency, of a painted glass window.

For if we examine the composition of a glass we shall find that the point of fusion is the determining point of its subsequent stability; the lower the melting point the less energetic is the combination of its constituents, and consequently the more easily are they separated by the decomposing agencies of the atmosphere.

Glass, as is well known, is a compound consisting of silica combined with various metallic bases. Silica—occuring in nature as flint, rock-crystal, and quartz—is itself excessively infusible, requiring the intense heat of the oxy-hydrogen blowpipe to melt it; but if it be heated with certain other substances, its fusing-point is considerably lowered and a transparent mass—glass—is the result. Of these substances, the alkalies soda and potash are the most energetic in lowering the melting-point of silica, but the resulting glasses, as might be expected, are the least stable. A glass composed of three or four parts of soda combined with one part of silica, melts at a low red heat, but the glass is entirely soluble in cold water. On increasing the proportion of silica the fusing-point rises and the insolubility of the resulting compound increases; but a point is soon reached—still short of producing a serviceable glass—when the further addition of silica produces opacity. Thus a single silicate of an alkali is totally unfit to form a satisfactory glass. The difficulty is overcome, however, by alloying with the silicate of the alkali a silicate of one of the group of metals whose oxides are known as the alkaline earths. The oxides usually used are, oxide of calcium (lime), for the production of a hard variety—crown, plate, and window glass generally, and oxide of lead for the softer but more brilliant kinds known as flint and crystal glass.

Without going further into the question of the composition of glass, enough has been said to show that the point of fusion is one of primary importance where the indestructibility of the glass is concerned. Now the two chief ingredients of the atmosphere that are destructive to painted glass are carbon dioxide and moisture. These being together exhaled in the breath of the congregation of a church, condense upon the walls and windows as a solution of carbonic acid, and, precisely as such a solution, descending as rain, and penetrating the earth, will dissolve the hardest limestone rocks, so it proceeds to act upon the base of the silicate to produce the more stable carbonate. The action is, of course, extremely slow when compared to the action of more active acids, but it is nevertheless certain, and in the case of fluxes containing a large proportion of base and badly-fired glass, it is astonishing the difference it will make, even in the course of two or three years.

The old glass-painters, probably through mere ignorance of any easier method of working, employed fluxes that were far more infusible, and consequently more permanent, than those now generally used, with the result that specimens of their work exist at the present time in a remarkable condition of preservation. Theophilus thus describes the manufacture of a painting colour in which the black oxide of copper took the place of the red and brown oxides of iron now in use. "Take copper beaten small, burn it in a little pipkin until it is entirely pulverised, then take pieces of green glass and sapphire" (a blue paste used in mosaic work) "and pound them separately between two porphyry stones; mix these ingredients together in the proportion of one-third powder, one-third green glass, and one-third sapphire. Grind them on the same stone with wine or urine, and keep them in an iron or leaden vessel."

Such a colour would be much more permanent than those now employed, and by combining the old flux with the modern brown oxide the advantages of both kinds would be obtained. But there is a difficulty in the way that cannot very well be surmounted by the glass-painter. The glass used by Theophilus and his contemporaries must have been considerably harder than that now generally made for church window purposes, and would thus bear the greater degree of heat necessary to fuse the old colour; but every glass-painter knows that even with the easily fusible colour-fluxes now in use it is often difficult to fire the softer greens and yellows without so far melting the glass as to cause the painting colour to fire away. This process of "firing away" consists in heating the glass beyond the critical point of softness, the iron oxide of the colour then enters into combination with the silica of the glass, forming the pale green transparent silicate of iron, and thus reduces the density of the painting. The hardness of the colour-flux, then, obviously depends upon the hardness of the glass, since it is impossible to use a flux only a few degrees softer than the glass itself.

To recapitulate. The stability of a flux depends upon the quantity of base present in it, This is indicated by the fusing-point, a low fusing-point indicating a high percentage of base and a high fusing-point the reverse. It is thus advisable to use as infusible a flux as possible; but the limit of hardness is regulated by the nature of the glass

itself, since if the degrees of fusion approach too closely, the glass decomposes the colour, the silica combining with the oxide to form transparent silicates.

In conclusion, it would be well to call attention to the importance of the firing operations. In order that the oxide may be thoroughly fastened to the surface of the glass, it should be completely covered by a thin film of the fused flux. This is indicated by the smooth silky lustre of the colour surface after firing, or it may be tested by pouring over the pieces of fired glass, placed in a shallow trough, a little hot hydrochloric acid, and allowing it to remain for some hours. If any of the oxide remains unprotected by a coating of flux it will be attacked and entirely removed by the acid.

To insure this thorough fusing of the flux it is certainly advisable to pass the glass through the kiln at least twice—in the first instance for the purpose of firing the outline, and in the second the subsequent painting. In the class of work known as "one fire painting," in which the outlining and shading are produced in one operation, a rawness is always observable on the surface of the colour, and especially when in this class of work stippling is resorted to, a roughness of surface is produced that is extremely favourable to the destructive action of the atmosphere.

G. E. W.

THE ARCHITECTURAL ASSOCIATION:

ANNUAL DINNER.

THE Annual Dinner of the Architectural Association was held on the 14th inst. at the Holborn Restaurant, Mr. E. W. Mountford, retiring President, in the chair, supported by Mr. W. D. Caröe, M.A., the newly-elected President, Sir Arthur Blomfield, Professor F. M. Simpson, and Messrs. H. L. Florence, W. H. Seth-Smith, A. Beresford Pite, T. Stirling Lee, F. W. Pomeroy, W. S. Weatherley, H. W. Burrows, Thomas Blashill, and others.

The toast of the "Queen and Royal Family" having been given from the chair,

Mr. A. Beresford Pite proposed the toast of "The Royal Institute of British Architects," and in wishing that body renewed health and increased vigour he said that architects had a great deal to do with health, it being a matter of *sanitas, omnia sanitas*, with them. He was sure that every one would wish well to the Royal Institute, though it might not be endowed with the health with which its members inspired other bodies. They would not desire to wish it well merely because of the benefits which it conferred upon them, a poor students' Association, for they (the members of the Association) felt that the Institute in helping them did honour to itself; but they had met that night really as a representative body, each member of which regarded members of the Institute as fellow-architects, animated to a great extent by the same ambitions as they were, who were brought into contact with the same business difficulties, and the same artistic problems. He ventured to say that a very hearty and cordial spirit of amity ought to exist between every architect and his representative Institute or Guild. He thought it was quite impossible to conceive of the art of architecture existing in England, and being practised by Englishmen, without there being a drawing together in some way, in some place, of those individual practitioners of a common art. If they granted that proposition, they practically granted the necessity for the existence of such an Institute as they had in London. But that Institute could not be healthily representative unless all architects cordially and heartily united in making that body represent their own individual conviction of what was for the benefit of the body politic; and he ventured to say that none of them could be so selfish, in their own little views of life, as to imagine that there was not more than one side, or two or three sides, to the vast variety of artistic and professional problems with which they were brought to face. Discussion of these problems, and co-operation in dealing with them, was essential to their well-being as a profession and as a body of artists. One had only to look at the publications and the work of the Institute generally, to be conscious that a vast amount of necessary work was done by that body. One of the first benefits that the Institute conferred upon students and young architects was access to a magnificent architectural library, and that benefit he did not think could be overestimated, for an architects' library—for architects, controlled by architects, and carried on by architects—was an essential to their well-being as students. The next benefit was the students' competitions—the prizes, medals, and studentships offered by the Institute—and it was not possible to deny the vast amount of good done to any art or profession by a representative body judging students' competitive work. But the Institute did other work for which they ought to be thankful. It was only necessary to reflect upon the recent discussion on the Conditions of Contracts to realise what an amount of time, talent, and industry had been given for the benefit of the profession, without any consideration of personal advantage or profit. It was also noticeable that in recent years competitions for public buildings had been in most cases successfully adjudicated by nominees of the Royal Institute of British Architects, and in this connexion he could not but think that with a little increase of organisation among themselves, and a definite increase of organisation among members of the Institute, the recent practice of appointing assessors by the Institute to control competitions could be extended, and the good resulting to the profession would be considerable, and especially to the younger members, to whom competitions were the golden ladder to success. Then the Institute bestowed upon them a journal of proceedings and transactions, as well as a liberal education in professionalism. But notwithstanding all this, one was forced to ask a very pointed question, viz.:—Had the Institute resolved that it is quite impossible for it to do anything to further the interest of architecture as an art? They could all admit what the Institute had done, as a profession for the profession, but as an Institute of Architecture, surely they might hope that the renewed health and increased vigour which they were wishing the Institute might produce some artistic activity, and that that activity would cause some artistic influence to be brought to bear on behalf of the profession as a body. He knew it was very difficult to achieve any influence upon art through the medium of interference. The interests of art and architecture were far above the preservation of historical relics, and he could not help hoping that the Institute would set itself the task of trying to solve the problem of how best to further the interests of architecture. In his opinion, in what the Institute did already for its younger members was to be found the germ of what it might do for the art of architecture as a whole. The competition for prizes might be indefinitely extended. The Institute might be in a position to offer prizes for the furtherance of the art of design, for the study of decoration, for the production of fine detail, for the production of fine work in any craft in which the art is associated, on a much grander and more important scale than was at present done in regard to the students' prizes. Again, why should not the Institute establish a school of design by inaugurating a series of awards in design? He did not see that it was impracticable. And why should not the gold medal be awarded every year to the architect who, in the opinion of his brethren as a body, produced the most original design in that year, or the design of most benefit to architecture at large? Why should the Institute, in short, only concern itself with professional matters relating to a business man's career? He did not think that the suggestions he had made, for the Institute to step out of professionalism and bestow its wisdom and intellect on architecture and architectural work, were beside the mark; certainly, they would all hope that the Institute might have renewed health and vigour in addition to its other usefulness to further the art of architecture.

Mr. H. L. Florence, in response, said that it might be inferred from the remarks of Mr. Pite that the two bodies were separate and distinct, but the distinctions which existed were more in matters of form than in reality. One difference was that the Association was yearly able to have a dinner, but an Institute dinner was a very rare occurrence indeed, and that fact suggested that the Association was in a better financial condition than the Institute. As to the points of resemblance, most members of the Institute had been or were members of the Association, and in taking office in the Institute ranks they had similar feelings and ideas as when they held similar offices in the Association. Early opinions were modified by time, and he was looking forward to seeing Mr. Pite occupying a seat on the Institute Council, when it was not unlikely that he would speak and act very much as he (the speaker) or any other member of Council did. He thought that the Institute and the Association really might be considered to form two grades of members of one large body. In listening to Mr. Pite's remarks he had been hoping to hear from that gentleman how he proposed to carry out his ideas. His singular suggestion, viz., the promotion of architectural art by means of prizes, if it was to be taken seriously, would first of all have to be considered in its financial aspect, for the Institute had no funds with which to establish a series of gold medals. And in this connexion he might say that he had recently noticed, with some amount of surprise, the large sums of money spent by the Association on meetings of a festive character. It seemed to him that the donation of the Institute to the Association did not suffice to pay for them. Another point which he should not like them to forget was that the Institute was not an Institute of London architects only, but of the architects of Great Britain. The affairs of architects in the Provinces received a large amount of attention by the Institute, and a large proportion of its extremely inadequate funds was expended on behalf of the Provincial architects. There was no immediate or definite gain to be shown, but their action tended to maintain the good fellowship which the Institute endeavoured to promote among architects in every part of the United Kingdom. Any efforts which the Institute might make in the future for the cultivation of architecture as a fine art depended very much upon the votes of its members. The Institute policy was largely governed by those who were sent by their societies to become members of Council, and that that policy was generally approved was evident from the fact that there was very little change, from time to time, in the constitution of the Council.

Professor F. M. Simpson, of Liverpool, then briefly proposed the toast of the "Architectural Association," and in doing so said that it was a matter for admiration that the Association still kept to its old love of education, going steadily ahead in spite of all opposition, and improving year after year its scheme of education for architectural students. Considerable change in the work of the classes had taken place since the old days, and no doubt there would be still greater changes in the future. The toast was coupled with the name of Mr. W. H. Seth Smith.

Mr. Seth Smith, in reply, said that an important body was being gradually evolved out of the Association. There could be no doubt that architects in England, just entering the profession, looked to the Association as being a body by whose help they could obtain the best training. The scheme which had been working for two or three years was a very bold one, but he felt quite confident in saying that it had been a great success; though, at the same time, he thought that some modification of it would be necessary—a view in which he did not stand alone. Success in the future could be no less than in the past, and he looked forward to a very great impetus in their educational scheme. They must not be forestalled, and they must go boldly forward. It was his great ambition to see the Association occupying the leading position in the education and training of architects, and he thought that they should not only have evening classes, but day classes as well. There could be no, or very little, difficulty about that, for those who employed young architects would be quite willing to shorten the period of apprenticeship, and also to reduce the premiums, if their pupils had already had considerable training. What crippled the Association most was the inadequate premises which they occupied, and it seemed extraordinary that the money could not be found for the purpose of building suitable premises.

Mr. Banister F. Fletcher then proposed the toast of "Instructors and Studio Visitors," coupled with the names of Mr. F. R. Farrow and Mr. T. Stirling Lee.

Mr. F. R. Farrow, in reply, said that they tried to teach students to learn for themselves. They not only prepared men for the Institute examinations, but also to become good architects, teaching them architecture and not mere cramming. As, no doubt, some of them had heard, their classes had not been attended quite so well in the past session as previously, and he thought that one reason was to be found in the eight hours' movement; for students who had been working all day for their masters, had little time or inclination for evening work. Then it had been thought that perhaps their instruction was a little too thorough, for some of their students did not want exactly the kind of education which they received in the classes of the Association, but an education which would enable them to pass the examinations. The question involved in this was an important one, and was receiving very careful attention from the Committee. On the one hand they had to consider the high ideals

with which the new curriculum was first started, and, on the other, the financial aspect of affairs.

Mr. Stirling Lee also responded. They were doing, he said, the highest and best thing in endeavouring to combine the arts, and in bringing all their students in association with those men who were trying to work out all the problems connected therewith.

Mr. F. T. W. Goldsmith, in a humorous speech, proposed "The Visitors," coupled with the names of Mr. H. W. Burrows and Mr. W. S. Weatherley, both of whom replied.

The Chairman then gave in appreciative terms the health of the new President, Mr. Caröe, mentioning, in the course of his remarks, the qualifications for that office which their new President possessed.

Mr. Caröe replied, and concluded by proposing the health of the Chairman.

The Chairman briefly replied, and then gave the concluding toast, "The Retiring Officers," coupled with the names of Mr. F. T. W. Goldsmith and Mr. F. G. F. Hooper, both of whom responded.

ARCHITECTURAL ASSOCIATION SUMMER VISITS.

I.—Bickley Park.

Some five-and-twenty members of the Architectural Association visited Bickley last Saturday to spend an afternoon in the inspection of various buildings erected from Mr. Ernest Newton's designs. The first of these was the fine range of stabling for Bickley Hall, comprising accommodation, not only for horses and carriages, but also for cows and other farm stock. The stalls are arrayed round a courtyard with carriage-houses on one side, stalls, horse-boxes, and washing-room opposite; mess-rooms, harness-rooms, and similar necessaries on the entrance-front, and the cow-shed opposite. The arrangements of the cow-shed and other farmyard accompaniments furnished the text for an instructive peripatetic discourse by the bailiff, Mr. Morgan, who, in the unavoidable absence of the owner and the architect, conducted the party. A separate block of buildings contains the piggeries, with slaughter-house and boiling place, and the fowl-house. Here much useful specialised information was obtained by the visitors. Amongst other points experience has here shown that tiles from Sevenoaks, though charming in colour, are not to be implicitly relied upon for durability.

Leaving Bickley Hall, a circular walk brought the party first to "Beechcroft," a moderate-sized house, very charmingly arranged with a picturesque group of stables. By the kind permission of Mr. Podmore, the visitors were allowed to see and enjoy the interior as well as the exterior, and a good example of unpretentious, but well thought out, design they found the arrangement of the dining-room, drawing-room, staircase, and entrance particularly, full of character, convenience, and comfort. Continuing their walk, the members passed by and inspected the exterior of two other houses erected from Mr. Newton's designs, and so returned to the station.

ROYAL ARCHITECTURAL MUSEUM AND WESTMINSTER SCHOOL OF ART.

The annual general meeting of the Royal Architectural Museum and Westminster School of Art, was held at the Museum, No. 18, Tufton-street, Dean's Yard, Westminster, on the 14th inst., Mr. W. C. Cocks occupying the chair during the first part of the proceedings, and among those present were the Duke of Westminster, Sir W. de Souza, Sir Arthur Blomfield, Mr. Aston Webb, Mr. C. F. Hayward, Mr. W. Pain, and Mr. W. Ford.

The report of the Museum and School of Art stated that the Council had to record the death of no fewer than three of their Vice-Presidents, the Lord Viscount Hardinge, Sir E. A. H. Lechmere, Bart., and the Right Hon. Sir A. H. Layard, G.C.B. They had also to express their deep regret at the resignation of the office of President by the Lord Bishop of Ely (Lord Alwyne Compton). The Council, in the emergency occasioned by the retirement of their President, resolved to approach the Duke of Westminster, K.G., and invite him to undertake the office; and his Grace had accepted the invitation of the Council. The Council referred with satisfaction to the balance-sheet for the past year, which presented a most favourable account of the finances of the Institution; for whereas in 1893 there was a considerable deficit on the year's operations, this was more than counterbalanced by the surplus in 1894. This was due mainly to two causes—first, to the rapid growth of the Westminster School of Art, the fees from which amounted in 1894 to 898*l.*, as compared with 700*l.* in 1893; and secondly, to the grants received from the Technical Education Board of the London County Council, amounting to 380*l.* They still, however, regretted that the source of income which, above all others, should be well-maintained, namely, that derived from the subscriptions of members of the architectural profession, was still chiefly confined to the fast-decreasing body of gentlemen who had from the establishment of the Museum accorded to it their generous and valued support. The progress of the School of Art, referred to in last year's report, had not only been maintained, but had steadily increased. The results of the examinations held in May, 1894, were not so productive as in 1893, the grant from the Science and Art Department amounting to 176*l.*, as compared with 206*l.* in the previous year; but it was to be observed that exceptional success in one year invariably places the next at a disadvantage, for the attainment of the highest successes precludes students from further competition in the same subjects, whilst minor successes place a limitation on future results. On the whole, however, there was no reason to be dissatisfied, but the contrary, especially as the school never departed from its ordinary course of study in order to suit examination requirements. John Gabriel Hardy, one of the students at this school, was successful last year in gaining a National Scholarship at South Kensington, with a maintenance allowance. With a view to the further development of the Westminster School of Art, which was much in need of additional room, a special grant of 100*l.* had recently been made by the Westminster Free Studentship Trust, as the nucleus of a fund for the rebuilding or enlargement of the school.

The minutes of the last meeting having been read and confirmed,

Sir A. W. Blomfield, in proposing that the Duke of Westminster be elected as President of the Museum and the School of Art, said it was a matter of great satisfaction to know that they were not inviting him to become President of a moribund society, which the museum was becoming a few years ago. The financial position of the Museum was much better, though that was not owing to any increase of support which might have been expected from the architectural profession and those interested in the Museum and its primary objects, but simply to the great and continually increasing success of the Westminster School of Art. But for that School the Museum must have been closed long ago, but now they had obtained a new lease of life, and he hoped that the Museum would yet receive more pecuniary support, and arouse a little more enthusiasm than it apparently did, from the members or the profession.

Mr. Aston Webb seconded, and the motion was agreed to unanimously.

The Duke of Westminster, in replying, said that if he could in any way help on the work in which they were engaged, he should be most happy to do so.

The new President having taken the chair, other officers for the ensuing year were elected, including the following gentlemen, who compose the Council:—The President, Hon. Treasurer, and Hon. Secretary; Mr. Walter Carew Cocks, Vice-President; and Messrs. C. F. Hayward, F.S.A., Sydney W. Lee, William Pain, J. Hungerford Pollen, M.A., J. P. Seddon, and Aston Webb. Representatives of the London County Council: Lord Ilchester, Sir Walter E. de Souza, Mr. Sidney Webb, and Dr. Garnett.

The Report of the Council and the balance-sheet for the past year were also agreed to, and Messrs. W. Pain and P. D. Leake were re-elected auditors.

A vote of thanks to the President for presiding terminated the proceedings.

THE ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

The Association of Municipal and County Engineers held a combined Lancashire and Northern Counties district meeting on the 15th inst. for the purpose of inspecting the Thirlmere reservoir of the Manchester Corporation Waterworks and the Syenite Granite Quarries of the Threlkeld Granite Company. There was a fairly large attendance of members, amongst those present being the President (Mr. A. M. Fowler, C.E., of Manchester), Messrs. E. Pritchard, London and Birmingham, J. Cartwright, Bury, T. Cole, Westminster, F. S. Button, Burnley, Smith, Dalton-in-Furness, Spencer, Newcastle-on-Tyne, Taylor, Newburn-on-Tyne, and others, mainly from the north of England.

A visit was first paid to the Threlkeld Granite Company's work, where a "blast," which brought down about 2,000 tons of rock, was successfully brought off, and the process of hand-dressing road-setts, of machine-sorting Macadam into various sizes, and of making cement flags was exhibited. The members then drove through the beautiful St. John's Pass to the Thirlmere reservoir of the Manchester Corporation Waterworks. The Thirlmere scheme was prepared by the late Mr. J. F. La Trobe Bateman, F.R.S., the engineer of the Longdendale Works, in connexion with Mr. G. H. Hill, C.E., who has carried it on on behalf of the Corporation, Mr. Bateman having died on June 10, 1889.

The following are some of the measurements:—

	Ft.	In.
Levels of lake (above sea-level)	553	2½
Levels of lake when raised 20 ft. for the supply of the first instalment of 10 million gals. a day	554	0
Level when raised to full extent of 50 ft.	584	0

	Miles.	Yds.
Length of lake when raised 20 ft.	3	500
Length of lake when raised 50 ft.	3½	220

Drainage Area to Lake.

	Acres.
Natural drainage area	7,400
Additional drainage area, to be hereafter diverted into lake when required	3,600
	11,000

Area and Capacity of Lake.

Natural area, 330 acres.

When raised 20 ft. for the supply of the first instalment of 10 million gallons a day: area, 565 acres; capacity, 2,534 million gallons.

When raised to full extent of 50 ft.: area, 793 acres; 8,135 million gallons.

Compensation Water.

	Gals. per 24 hrs.
Quantity of water to be discharged into St. John's Beck before diversion of additional drainage area into lake	4,126,125
When lake is raised to full extent of 50 ft.	5,520,487

Embankment at Lake.

The level of the lake is raised by means of an embankment, constructed at the outlet into St. John's Beck.

The top of the embankment is 6 ft. 3 in. above the level of the lake when fully raised.

Length of embankment, 857 ft.

Width at top of embankment, 18 ft. 6 in.

Greatest height of embankment from foundation, 104 ft. 6 in.

Roads.

Length of new roads constructed by the Corporation, 8 miles 1,130 yards, viz.:—

	Miles.	Yards.
West side of lake	5	965
East side of lake	2	242
Across embankment	—	1,683

Aqueduct.

Aqueduct constructed to convey 50,000,000 gallons a day.

Diameter of aqueduct, 7 ft.

Fall of aqueduct, 20 in. per mile.

Length from Thirlmere to Manchester, 95 miles 1,642 yards, viz.:—

Tunnels	14¾ miles.
Cut and cover	36¾ ,,
Pipes	45 ,,

Diameter of straining well for the admission of water into the aqueduct from the lake, 37 ft. 6 in.

The rainfall over the watershed varies from 52 to 137 in. per annum.

The storage, when all the works are completed, will provide 50 million gallons of water per day for 150 days, even if no rain falls during that time, without drawing below the original margin of the lake.

It is intended to bring the supply by instalments of 10 million gallons a day, at such intervals of time as may be found necessary.

The purchase of the watershed, including the lake and the wayleave for the tunnels and cut and cover, and for the laying of five lines of syphon pipes across the valleys from Thirlmere to Manchester, and the works as carried out, i.e., all the

tunnels and cut and cover or concrete tunnel constructed near the surface of the ground to convey 50 million gallons per day, and one line of pipes to convey 10 million gallons per day to Manchester, will cost, roughly, say 2,500,000*l.*

When the five lines of pipes have all been laid and the lake raised fifty feet, it is estimated that the cost will be between four and five million pounds sterling.

The first contract was let at the latter end of 1885, and the works for the supply of the first instalment of 10 million gallons a day completed and opened October 12, 1894.

The members were entertained to luncheon by Mr. Harkewitz, at the "Keswick" Hotel, immediately after their return to Keswick. After luncheon,

Mr. Harkewitz said that the members of the Association had been afforded an opportunity of seeing two works in which Municipal Engineers were interested—the Thirlmere Water Scheme of the Manchester Corporation, and the stone works of the Threlkeld Granite Company. He said that the Threlkeld Company used only one class of stone for roads setts, so as to supply a thoroughly non-slippery sett. The concrete flagging manufactured by the Threlkeld Granite Company was hand-pressed, as their experience proved that machine-pressed flags were deficient in moisture and cement, and did not make a tough flag. He reminded them that the City Engineer of Liverpool had said, concrete is the pavement of the future for footpaths.

The President, in proposing the health of Mr. Harkewitz, said that he had thrown open his works, in all branches, to their inspection, and had, so to speak, imparted to them the secrets of his trade, as he had freely explained the methods appertaining to the manufacture of the concrete flags. The specimens of concrete flagging, and of granite setts, which had come under their inspection, were beyond criticism.

The toast having been honoured, Mr. Harkewitz replied.

Mr. J. Cartwright (Bury) proposed the Corporation of Manchester. He said it was of great interest to Municipal Engineers to have an opportunity of seeing the Thirlmere works. The scheme ranked as second to none in the country as a great undertaking for supplying water; and though there was not as much work in Thirlmere as in some reservoirs they had seen, the thought, care, and engineering skill which had been bestowed upon that great scheme called forth the admiration of every engineer in the country. The Corporation of Manchester was a very bold Corporation, with large ideas, which it carried out with thoroughness.

The toast having been honoured,

Mr. Benton, who has charge of the Thirlmere reservoir, responded.

Mr. E. Pritchard, Birmingham, proposed "The Visitors." He said he had never seen stone works which pleased him better than those of the Threlkeld Company. It was an act of kindness on the part of Mr. Harkewitz to throw open his works without the slightest reserve and give them the fullest possible insight into his methods of manufacture. He believed the Threlkeld stone had only to be better known to be more appreciated. The Thirlmere works were model works, not only for the Kingdom, but for the world, and he could not help feeling that the Corporation of Manchester had done them a great kindness in allowing them the privilege they had enjoyed.

The Vicar of St. Mary's responded.

Mr. Pritchard, Birmingham, then proposed the health of the President. He said that, looking back over Mr. Fowler's year of office, they would find he had done as much, if not more, than any other President of the Association.

The toast having been honoured, the President, in acknowledgment, said he desired to thank the members of the Association for the kindness with which they had supported him during his year of office.

The meeting was adjourned to the annual meeting at Halifax on June 27, 28, and 29.

COMPETITIONS.

SHOPS, &C., PRESTON, LANCASHIRE.—The following is the result in the competition for fireproof shops, offices, and two hotels, &c., Preston, Lancashire. First premiated design, Messrs. Essex, Nicol, & Goodman, Newhall Chambers, Newhall-street, Birmingham; second, Mr. E. W. Johnson, Albany Buildings, Lord-street, Southport; third, Mr. G. G. Hoskins, F.R.I.B.A., Darlington.

Illustrations.

EAST FRONT OF THE PARTHENON.

THIS view of the east front of the Parthenon, from a recent photograph, is inserted as an illustration of the article by Mr. Somers Clarke on another page, as giving a general idea of the present state of the building.

INSTITUTION OF CIVIL ENGINEERS:

FOUNDED IN NEW BUILDING.

FOR many years past the premises at Nos. 24 and 25, Great George-street, Westminster, lately occupied by the Institution of Civil Engineers, have been found totally inadequate for its constantly-increasing numbers, especially as regards the library and the office accommodation.

Many schemes for enlargement have been, from time to time, proposed, and last year I was instructed to prepare designs for the entire rebuilding of the premises on the sites of Nos. 24, 25, and 26, Great George-street, and my plans, with some modifications, having been approved by the Council, the new building was commenced in October last, and it is expected to be sufficiently completed for the use of members by November, 1895, leaving only the decorative work of the interior to be undertaken during the recess, 1895—'96, or at a future time.

It will be seen by the plans that the whole of the basement is utilised for furniture and book stores, caretaker's-rooms, and other domestic accommodation, and for purposes of heating and ventilation of the building.

On the ground floor the offices (all *en suite*) occupy nearly the whole of the façade, the entrance being placed at the west end. The staircase (which goes the whole height of the building) is placed centrally. From the inner hall is entered the Council-room and the reading-room (60 ft. × 30 ft.), and there is a private staircase for the use of members of Council, from the Council-room to the lecture theatre.

An hydraulic lift is provided available for passengers or goods from the basement to the top floor.

On the first floor the library (87 ft. by 30 ft.) occupies the whole façade, and on three sides of this room are galleries fitted with bookshelves. It may here be noted that the Institution at present possesses about 28,000 vols., increasing annually by about 900 vols. In the new building there will be accommodation for about 56,000 vols., thus allowing for the expansion of the contents of the library to double the present amount.

At the rear of the library, divided by the main staircase, is the lecture theatre (60 ft. by 40 ft.), and an additional library (40 ft. by 24 ft.) all on one level, and being arranged practically *en suite*.

On the second floor over the large library is a room of like size, to be used as additional library and reading-room, museum, &c. This room is capable of being divided into three by sliding doors. Two additional rooms for storage of books are on this floor.

The architectural façade is simply treated in the Italian Renaissance, and it is intended to convey the notion of strength and solidity, characteristic of the civil engineer and his work.

In the expanded frieze over the columns, which form the features of the façade, and divide it into suitable window bays, are seven circular niches intended to be filled with portrait busts of the most distinguished English engineers who have passed away, leaving their achievements behind as incentives to their successors in the present and the future.

For the front, Portland stone from the Whitbed will be used, of which special selection is made from time to time by the architect at the quarry.

Polished granite is slightly used in the front, but only in purely decorative features of the design, so as not to disturb the effect of simplicity and solidity.

As Great George-street is 60 ft. wide it will fortunately be possible to obtain a view of the building slightly foreshortened only.

The foundations have been necessarily carried to a great depth through the treacherous super-soil which extends throughout Westminster.

The interior, as far as used or seen by the public, is treated richly, the main staircase having its steps, landings, columns, and pilasters of solid marble in various and harmonious colours.

The interior of the lecture theatre is treated in an architectural manner, the walls being divided into bays by an order of pilasters, whilst the ceiling, which is practically a large pendentive treated in glass, rests on a large groined cove springing from the entablature of the said order. This cove contains over each bay panels wherein may be inserted from time to time medallion-portraits of civil engineers in the future who may be deemed by their contemporaries worthy of the honour.

The library, which is a most important feature in the Institution, is to be finished throughout in oak, richly carved, and the ceiling will be also elaborately treated in fibrous plaster. It is believed that the library is unique as a professional one, both as regards reference and study.

An additional store library (to be used also as a museum), is over the main library, and is treated in a much simpler manner and lighted from above.

The Council-room, reading-room, and offices on the ground floor are handsomely but more plainly treated.

The buildings throughout are fireproof, the floors being constructed on the system of Messrs. Fawcett & Co., of Queen Anne's Gate, Westminster. The constructional ironwork of roofs, and the wrought-iron floor girders, will be executed by Messrs. Barry & Higham, engineers, of Old Broad-street, London.

The contract for the building has been taken by Messrs. Mowlem & Co., of Westminster, at the sum of 41,000*l.*, and they are using the most strenuous efforts to fulfil their contract by the above-named time.

The above sum is exclusive of fittings and artistic decorations of the interior, and a further considerable outlay may be expected to be made by the Council, who are animated with a desire that the new house of the Institution shall be as good and as handsome as it is felt it should be for so important a body.

Among the sub-contractors may be mentioned, Messrs. Burke, for the marble and mosaic work; Messrs. Jennings for the sanitary works, fittings, and plumbing; Messrs. Jeakes for heating and ventilation; and Messrs. Wilkes for metallic cement, which will be considerably used for the flooring and other features.

CHAS. BARRY.

MOORGATE COURT: ENTRANCE HALL.

WE publish to-day a drawing of the entrance-hall at Moorgate Court, E.C. It will be remembered that a drawing representing the main front of this building was hung in last year's Academy, and the drawing we now reproduce is in this year's Academy.

Moorgate Court adjoins the Institute of Chartered Accountants, and contains more than 100 rooms; the drawing represents the principal hall and staircase, with a passage-way to lift.

The whole of the wall surfaces have been treated with marbles, the object being to secure a permanent form of decoration of a richness worthy of an important building, and, at the same time, to ensure perfect cleanliness.

The plinth, dado, dado moulding have been executed in "Verde Ferrato," whilst the wall filling has been treated with 9-in. bands of Pavanazzo alternating with 3-in. bands of ancient rich red St. Ambrosio di Verona. The treads and risers throughout are of Piastracia, and the newels and pendents as well as the archways over, are of pure white statuary marble.

The ceilings and soffits of the staircase, together with the friezes, are in decorated plaster-work. The balustrading is of wrought-iron and brass, and the handrail is of brass.

The architect is Mr. H. Huntly-Gordon; the marble work was executed by Messrs. Farmer & Brindley, the decorative plaster-work by Messrs. Jackson, and the wrought-iron work by Messrs. Jones & Willis.

BRIDGES OVER THE BALTIC CANAL.

IN order to carry the various roads and railways over the Baltic and North Sea Canal, it was necessary to construct several large bridges, the most important of which are those at Levensau and Grünenthal. These, as will be seen from our illustrations, are high-level arched bridges of considerable size, the largest, that at Levensau, having a span of 540 ft. and a height above the Canal of 140 ft., sufficient to permit the largest vessels to pass under it.

The bridge at Grünenthal is not quite so large, the opening being some 520 ft. The braced arches forming this bridge are gradually reduced in depth from the centre towards the abutments. These arches are pin-jointed at their ends, and

the roadway is carried at a level of about half-way between these bearings and the summit of the ribs.

This form of bridge, owing to its effective outline, and also for economical reasons has often been adopted on the continent, but in England there are but few opportunities of employing this type of construction.

A precisely similar bridge, although somewhat larger, was however proposed to be built by Sir Joseph Bazalgette in 1876 across the Thames, near the Tower of London, but the scheme was so strongly opposed owing to the limited head-room which it afforded to vessels passing up and down the river, that it was ultimately decided to abandon the proposal.

The advantages of this class of bridge are, it must be confessed, partly neutralised by the expensive nature of the staging required during their erection.

In addition to the above there are four swing-bridges over the canal, one at Taterpfahl, and three near Rendsburg, all of these are operated by hydraulic power.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council, the first after the Whitsuntide recess, was held at the County Hall, Spring Gardens, on Tuesday, Mr. Arthur Arnold, Chairman, presiding.

New Street from Holborn to the Strand.—The Improvements Committee presented an adjourned report in reference to the formation of a new street from Holborn to the Strand. They recommended—

"That the Improvements Committee be instructed to prepare a scheme for the formation of a new street from Holborn to the Strand, subject to the condition that part of the cost of the improvement shall be dealt with on the basis of the compromise arrived at in connexion with the betterment clauses of the Tower Bridge (Southern Approach) Bill."

Colonel Ford proposed as an amendment—

"That the Council, whilst not expressing any opinion as to the priority to be given to any particular improvement, authorises the Improvements Committee to inquire in what parts of London and in which directions improvements in communication are most urgently required for the accommodation of the metropolitan traffic, to estimate and report the approximate amount of the annual burden which each scheme would throw upon the ratepayers, and to consider under what financial conditions in each case the improvement could equitably be undertaken."

Mr. E. R. Turton seconded the amendment, which, after considerable discussion, was lost on a show of hands. In the division which followed there voted for the amendment, 51; against, 64.

The recommendation of the Committee was then agreed to, with the addition of the following words, "and that the Committee be instructed, when submitting their scheme to the Council, to present also the estimated recoupment likely to accrue under the 'betterment' clauses."

A Kentish Town Improvement.—The Improvement Committee stated that they had to report that the improvement of Fortess-road, Kentish Town, had been completed, and that they had formally handed over the charge of the widened thoroughfare to the vestry of St. Pancras. The width of Fortess-road had been increased from 33 ft. to 60 ft. at the point where Fortess-road and Highgate-road entered Kentish Town-road. Parliamentary powers for the improvement were obtained in 1891. Three-fourths of the cost of the work was to be paid by the Council, and one-fourth by the Vestry of St. Pancras.

Mr. Wetenhall proposed that the report be not received. He said that the street was in a really dangerous condition, and it had the appearance of having been laid for years, the stones being loose in many parts. If the matter were referred back for the Engineer of the Council and the Engineer of the parish to confer together some amicable arrangement might be arrived at; otherwise he was afraid the affair would end in some sort of litigation.

Mr. Idris seconded the amendment, which, however, was negatived, and the report was agreed to.

THE WATER BILLS.—Mr. McKinnon Wood brought up the report of the Parliamentary Committee, which described the proceedings of the House of Commons Select Committee on the Lambeth Water (Transfer) Bill on the 14th inst., and added:

The Committee have now adjourned the consideration of the Bills until Tuesday, when the case of the opponents in opposition to the preamble of the Bills will be commenced. It will be necessary for us, in the event of the preamble passing, to be prepared with some suggestion in the form of a clause or clauses to be substituted for Clause 6 of the Lambeth Bill; but we are not prepared to commit the Council to any such clause without further instructions, doubting how far our authority justifies us in so doing. We have therefore determined to report the position for the information of the Council, with a view to its giving us such further instructions in the matter as it may think fit. . . . We recommend: "That we be authorised to draft an alternative clause in substantial agreement with Clause 6, but following so far as may be possible consistently therewith the indications of the Chairman of the House of Commons Committee."

Mr. Benn, M.P. (Vice-Chairman), moved that all words after "alternative clause" in the recommendation should be omitted.

Dr. White seconded the amendment, and suggested that the following words should be added after "alternative clause": "To be submitted for the Council's approval."

This was agreed to, and the recommendation of the Committee, as amended, was adopted.

Having transacted other business, the Council adjourned.

ARCHITECTURAL SOCIETIES.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The members of this Society had their first excursion on Saturday, June 15, to Hardwick Hall. Among those present were Mr. C. Hadfield (President), Mr. C. J. Innocent (Hon. Sec.), Mr. T. H. Waterhouse. J.P., Messrs. E. M. Gibbs, F. Ward, R. F. Drury, Webster, Smith, Winder, Lockwood, Hemsoll, Gibson, Cook, Mitchell-Withers, Longden, Benton, Norton, Wigfull, and many others. Mr. Benjamin Bagshawe, the Deputy-Coroner, who is a lay member of the Society, conducted the party over the house and grounds. He has spent much time in recent years in investigating the records and accounts in the house, and he gave most interesting explanations of the muniments, which were produced for inspection. The large number of historical portraits which the hall contains, the vast quantity of exceptionally valuable tapestry, unique furniture, and art objects, as well as the decorations and the building itself, were all examined. The old hall also came in for a considerable share of attention. Portions of the house, not shown to the ordinary visitor, as well as the private gardens, were open to the party, and a photograph of the group was taken on the lawn. At tea at the Hardwick Inn cordial votes of thanks were passed to the owner, the Duke of Devonshire, for permitting the visit; to Mr. Bagshawe, for his descriptive lecture; and to Mr. C. J. Innocent, Hon. Sec., for the admirable arrangements.

NORTHERN ARCHITECTURAL ASSOCIATION.—An outdoor meeting of the members of the Northern Architectural Association was held on the 15th inst. for the purpose of visiting the new tennis-court erected by Captain Sir Andrew Noble within the grounds of Jesmond Dene House, from the designs of Mr. F. W. Rich, architect, who conducted the party over the building. He mentioned that tennis-courts of this description were not at all common, only thirty-three being known to exist in the United Kingdom. Among the oldest of these is that at Hampton Court, another being at Lord Salisbury's seat at Hatfield. Sir Andrew Noble's tennis-court has been built by Messrs. Lesslie & Co., of London, who have also constructed other modern courts. Sussex bricks have been used throughout the building, which covers an area of about 800 square yards, including the bath and dressing-rooms and marker's residence. Subsequently the party proceeded to inspect the reception-room at Jesmond Dene House. This mansion, the nucleus of which was originally built in 1822, has, during the last quarter of a century, been amplified by Sir Andrew Noble—Mr. R. Norman Shaw, R.A., and Mr. F. W. Rich acting as his architects. A vote of thanks to Sir Andrew Noble, and another to Mr. Rich for conducting the party, concluded the proceedings.

THE SANITARY INSTITUTE.—At an examination for Inspectors of Nuisances, held at Leicester on June 14 and 15, the following twelve candidates were certified, as regards their sanitary knowledge, competent to discharge the duties of Inspectors of Nuisances:—S. H. Andrews, Leicester; F. E. Cox, Brighton; H. J. Gudgin, Sheffield; W. M. Hibberd, Southampton; W. T. Howse, Hinckley; E. G. King, Rotherham; Margaret Lock, Streatham; E. Richards, London; C. C. Smith, Leamington; S. Spencer, Wolverhampton; J. Turton, West Bromwich; C. R. Walsh, Darwen.

Books.

Building Construction: Advanced and Honours Courses. By CHARLES F. MITCHELL. London: B. T. Batsford. 1895.

THE success which has attended the publication of the elementary course by Mr. Mitchell on this subject has justified the appearance of the present volume, and we are pleased to note that the same thoroughness which made the success of the former is to be found in the latter. Within the limits of the size adopted it is difficult to imagine a more judicious selection of valuable information and instruction in building construction than this work presents. A concise account of materials is given, and in addition to the usual purely constructive work, space is found for a lucid explanation of graphic statics and for some account of the guiding principles of sanitation. As the work appears primarily intended for the use of candidates preparing for the examinations of the Science and Art Department, an appendix is included, giving specimens of past examination-papers. We are inclined to question the wisdom of this, as the forty pages thus occupied might be better employed in amplifying some of the more important chapters. The full use of figured dimensions in the illustrations is a good feature which has been followed here as in the former volume, and adds to the value of the work for students. The two parts together should be in the hands of every architect's pupil, and will be found excellent value for the small price.

A Handy Book on the Law Concerning Owner, Builder, and Architect. By JAMES WALTER SMITH, Barrister. London: Effingham Wilson & Co. 1895.

MR. J. W. SMITH has had more experience in the compilation of legal handbooks than any other living lawyer: the number which he has written is considerable, and it is therefore not surprising that the work before us is very well done. It is completely free from legal technicalities, but throughout it gives legal advice in plain English. There is really no more to be said. But, by way of illustration, we may cite what Mr. Smith says upon the vexed question of advertisements for architects' designs: "Again, if nothing is said in the advertisement to the effect that the author of the best design is to be employed as architect in the superintendence of the building, the mere fact of his being the successful competitor does not entitle him to be employed in the superintendence, even if his design is used. The advertiser has only asked for plans, &c., and must pay the rewards which he has offered, but he is not bound to do more. It will be useless to talk about the 'custom,' 'understanding,' 'invariable practice,' &c., of architects, for two reasons: one, that the advertiser is not an architect, and the other that there is a written contract. It may be disappointing, it may be insulting: but a rival may be employed for the more remunerative part of the work" (p. 21). This is plain and clear; there is no mincing of matters, and no legal phraseology; he who runs may read; but having read it no architect of prudence and self-respect will send in designs for a building, unless it is stated in the advertisement that the successful competitor shall be the architect for the building.

The London Building Act. A Text-book for the use of Architects, Surveyors, Builders, &c. Containing the Act printed *in extenso*, with a full Abstract, &c., &c. By BANISTER FLETCHER, Professor of Architecture and Building Construction, King's College, London. London: B. T. Batsford. 1895.

THIS book contains the full text of the London Building Act, along with additions in the way of comments, an abstract, and illustrations. The text portion of the Act is printed in good clear type, and the abstract of the portion of the Act relating to building is very useful as a finger-post to the sections in which the detailed regulations in regard to various operations of building are to be looked for—an assistance the more desirable from the fact that the Act is by no means well or systematically arranged.

The coloured sections of walls, showing thicknesses for different heights and lengths, may assist some people in realising the precise effect of the provisions more easily than would otherwise be the case, but we do not know that putting the heights and thicknesses into schedule form is not just as ready a way of simplifying the matter

as the coloured sections. One or the other addition was no doubt wanted, in consideration of the unwieldy manner in which the requirements for walls are written out at full length in the Act. There should have been a statement on these and other diagrams as to the scale they were drawn to, besides the figuring. The general Introduction draws attention to some of the special points in which the Act alters the conditions of building in London. The reason given for the occasional discrepancy between the legal and geometrical centre of a road is no doubt the right one. Some of the other and more surprising conflictions of language and definition in the Act the author does not attempt to explain, perhaps because it is hopeless.

The London Building Act, 1894, with Appendices containing Statutes other than the Building Act, still in force and affecting Building Operations, &c., &c. By WILLIAM R. GRIFFITHS, LL.B., and F. W. PEMBER, M.A. London: W. Clowes & Sons. 1895.

THIS may be considered the lawyer's book on the London Building Act, as the one mentioned above is the architect's and builder's book. The 1894 Building Act is very well treated, each of the sections being accompanied by comments in small type giving references to previous legislation, indicating what the alterations have been, and giving explanations as to the actual bearing and meaning of some of the more complicated paragraphs of the Act. The book contains also reprints of the Metropolis Management Act, 1855; the London County Council General Powers Act, 1890; the Factory and Workshops Act, 1891; the Public Health (London) Act, 1891; and the various collections of by-laws in force in regard to different classes of structures and operations. The book is well indexed, and contains, besides the general index, two tables of page references, one to cases cited, the other to statutes quoted or referred to. Altogether it is a very complete and useful handbook to the subject of building law in reference to London.

The London Building Act, 1894. By A. J. DAVID, B.A., LL.M., Barrister-at-Law. London: Crosby Lockwood & Son. 1894.

THIS is little more than a reprint of the London Building Act, 1894, with an index, and some brief notes to some of the sections, referring to the original form of some of the provisions in previous Acts, or to other clauses in the present Act which may be looked at in connexion with them. Occasionally a cautionary note is added as to the manner in which a section is to be interpreted. The book has the advantage of being conveniently small and compact.

TRADE CATALOGUES, &c.

MESSRS. DOULTON & Co. send us a new and large illustrated catalogue of their sanitary appliances, including water-closets, urinals, baths, sinks, lavatory basins, &c. We are glad to see that the majority of the water-closet basins show sections with a deep standing water-charge in the basin; the shallow basins, though they enable the flush of water to be somewhat economised, have been found wanting, and the apparent saving of water is only at the cost of insufficiently cleansing the trap. The bath and lavatory department of the catalogue shows an immense variety of designs and contrivances, among them some special arrangements for schools and for asylums and hospitals which are worth attention. The "Lambeth Instantaneous Water-heater" provides automatically for preventing the gas being turned up except when there is water in the pipes, and turns it down when the flow of water is cut off, so as to prevent any chance of the heater being burned out. There are plenty of designs for wooden bath enclosures, things that every house is better without, but we presume people will have them. As to the decoration of the baths made to be erected without casings, we wish that the artistic taste which presides over the productions of "Doulton ware" were brought to bear on the bath and lavatory decorations, which are not better in this respect than most others. There is a large variety of flushing-tanks, among them a useful small circular automatic flushing-tank, either in stoneware or in cast-iron coated with the Angus Smith solution, which are specially intended for fixing underground to flush short lengths of drain. There is also an ingenious combined automatic flush-tank and grease interceptor so contrived that the water is flushed away without the grease, the fact of the grease floating on the top being utilised to control it. Manhole covers, sinks, gully gratings, &c., are also included in the catalogue, and also decorative tilings for hearths and walls. These are superior, in a decorative sense, to the bath designs, because they do not attempt too much. The fault in these matters, however, lies very much with the public, who mostly prefer showy things.——Messrs. Morrison Ingram & Co. send us a large illustrated catalogue of sanitary fittings, containing a great deal of good work. Among special arrangements illustrated, a good one where space is limited is that of the combined bath and lavatory, the lavatory basin being mounted over the small end of the bath, so that the feet of the user of the bath can go under it, the basin facing to the side of the bath for separate use; one supply of hot and cold water serves both bath and basin; a saving in plumbing. The porcelain baths, with steamless fittings, are very good articles, and all the better for being left plain or with a little very simple decoration. The wood-cased bath, page 83, is very neatly finished; in some other parts of the catalogue we find, as usual, a great deal of elaboration of ornamental work, especially cast-iron supporters and standards, which would be much better omitted. Manufacturers who wish to recommend their illustrated catalogues in the eyes of architects will do so much better by showing plain well-executed practical work than all this ornament, which is seldom or never well designed. On page 159, for instance, is a plain cast-iron bracket for a closet-cistern (No. 118) which is perfectly satisfactory; opposite to it (No. 119) is an "ornamental" one, which is utterly bad, an attempt to design by someone who does not know what design means. Why spoil an illustrated catalogue by putting this kind of gimcrack into it? We do not go to trade catalogues for art, but for practical work. The catalogue includes a large selection of plumbers' brass-work, tops for baths, &c. The combined spray and reclining bath is a convenient and inexpensive arrangement, with no erection above the bath except the stand-pipes for spray and shower and a curtain which is intended to hang down inside the bath (when the spray is used) and prevent water getting to the floor.——Messrs. Farrar & Co. send us a catalogue of their work in metal casement windows, drawing special attention to their sloping sill with water drainage holes. A new form of casement for opening inwards when required is noticed in another column.——Mr. Geo. Wragge's Supplementary Catalogue of metal casements and opening gear shows among other things a section with the inner bar of the sill slotted and bevelled to catch and conduct away condensed water from the inside of the window. A double metal casement opening outwards in pairs and with no centre-bar is also shown. Some of the metal-work design for casement fittings and hinges is very satisfactory in style.——The Leeds Fireclay Co. send brief particulars of the goods to be seen at their new branch house in Manchester.——Messrs. T. Walker & Co., of West Hartlepool, send a book of photographs of the different departments of their large saw mills and timber stores, showing the rooms in which various processes of manipulating timber are carried out; also photographs of various interiors filled with roofing, wainscotting and other work carried out at their mills.——Messrs. E. H. Shorland & Brother send us their illustrated catalogue of their three principal classes of stoves, as well as other articles manufactured by them. The "Manchester" grates and stoves are made so as to combine ventilation with warming, with flues for the supply of cold air, and warm air delivery through the upper part of the grate or through the top of the stove; the stoves are also made with descending flues where desired, so as to get rid of the unsightly stove chimney. Another type is made with a fire-tile back projecting forward over the grate to reflect the heat into the room. Many of these grates, as illustrated here, have also the merit of being good and satisfactory in appearance. Drawings are given showing the arrangement of flues for inlet of warmed fresh air into the room.——Messrs. Baird, Thompson, & Co. send us a catalogue of chimney-cowls and ventilators. As to the action of ventilators as extractors, without any mechanical means, we have no great opinion; they may act when wind is blowing, it is obvious that they cannot act when the air is still, which is when they are most wanted. Chimney-cowls to prevent wind blowing down the chimney come under another category, and those contrived by Messrs. Baird, Thompson, & Co. seem likely to effect their object.——Messrs. J. H. Patterson & Co. send a book containing a collection of photographs from works in marble carried out by them; the designs, we presume, are those of the architects whose names accompany the illustrations, but the photographs give the impression that the work has in all cases been very well carried out.——Messrs. Bolding & Sons send us an illustration of their "self-cleaning" iron tanks for drinking-water, provided with a circular flushing pipe running round the rim of the circular tank, by which the whole interior can be cleansed and dirt and sediment washed away.——Mr. F. W. Barker sends a sheet of illustrations of his radiators for warming and ventilating.

Correspondence.

To the Editor of THE BUILDER.

GROUND GLASS AS A BUILDERS' MATERIAL.

SIR,—Owing to a difficulty recently experienced in getting rid of broken black glass, which at the present time in London has no market value, it occurred to me that it might, if crushed or ground, be used as builders' sand, and would, in some circumstances, be an even more useful material.

Accordingly, I accepted an offer of Mr. Carter, of Mark-lane, to grind a small quantity by means of his patent machine, and I shall be glad to show any of your readers who may be interested in the subject a sample of the product. The cost of grinding is very small, and there is a large quantity of black and other glass to be obtained in London for the cost of cartage. It should therefore be worth the while of some enterprising builder who has steam-power at his disposal to make the experiment for himself. I can give him fifty tons of glass to begin on.

I enclose a small sample for your inspection.

F. S. PLOWRIGHT.

37, *Oval-road, Camden Town.*

*** See our Note on page 465.

INSURANCE OF CEMENT WORKS.

SIR,—As the action of the insurance companies in giving notice of enormous advances in premiums chargeable upon cement works is a matter of serious import to cement manufacturers now that the trade is suffering from depression and foreign competition, perhaps you will allow me to suggest that the leading manufacturers should call the trade together and endeavour to form an association for mutual insurance.

WM. J. KEMP,
Managing Director,
Sub-Wealden Gypsum Co., Ltd.

The Student's Column.

BRICKS AND TERRA-COTTA.—XXV.

LOCAL DEVELOPMENT OF BRICK-EARTHS (*continued*).

Wealden District.

IN briefly alluding to the various brick-earths in the Wealden district we shall say a few words also respecting contiguous areas that do not, properly speaking, fall within the Weald as generally understood. The Wealden formation contains several distinct beds of clay which are worked for bricks and tiles in Sussex and Kent. One of these, the Wadhurst Clay, consists of alternations of clay, shale and sand-rock, and occasional beds of fossiliferous limestone, of calcareous sandstone, and of clay ironstone. Its total thickness is rarely less than 60 ft. whilst it often attains to 100 ft. The Grinstead Clay closely resembles the Wadhurst; in a brickyard not far from Paddockhurst a red and purple clay is developed in the uppermost part of the series. The Weald Clay itself is almost entirely composed of clay, but gets shaly with depth of working. The shale is generally brown or blue in colour, whilst the clay in addition is often yellow. Occasionally, red and mottled clays put in an appearance. In the neighbourhood of Leith Hill it is estimated that the Weald Clay alone is between 900 and 1,000 ft. in thickness. The largest brickyards in the district, however, are along the banks of the Medway, and the materials employed are Gault Clay, and the old alluvium of the river, especially in the vicinity of Maidstone. The gault is very uniform in character, even when traced over a wide area; it consists essentially of stiff blue clay, almost black in some localities. The section at the great brickyard at Aylesford is thus given by the late Mr. Wm. Topley.*

* "Geology of the Weald" ("Mem. Geol. Surv."), 1875, p. 153.

Brickyard Section.—Aylesford.

Thin, irregular capping of gravel.

Chalk Marl, whitish, breaking up into small pieces (by weathering), with small dark grains here and there, and also masses of stone; 12 to 15 ft., passing into—

Greenish grey marly sand, with dark grains, small irregularly-shaped dark phosphatic nodules, and "race," Upper Greensand, 18 in. in thickness.

Gault Clay; the uppermost 3 ft. or so light-coloured and marly; the remainder being bluish-grey to a great depth.

The well-known Burham brick-pit yielded a somewhat similar section. In the smaller brickyards, sand is generally mixed with the Gault Clay in the manufacture of bricks, the clay alone being too stiff; a certain amount of calcareous matter is also frequently added. The product is the celebrated "gault bricks"; but it may be noted that many kinds known in the market as "gault bricks" are not made from Gault Clay, though they may be none the worse for that. The divers river alluvia, as before mentioned, furnish an excellent brick-earth in many localities in the district, and the bricks made therefrom are also sometimes known as "gault bricks." Sittingbourne, as everyone is aware, is a celebrated brick-making district, the superficial deposits in that area yielding good brick-earth. The Thanet Sands in the neighbourhood are often very argillaceous, and have been employed also in the manufacture of clay goods suitable for the London market.

Dorset District.

The most important earths in Dorsetshire are those in the "Isle" of Purbeck and at Poole, so largely used in the manufacture of superior ware; but as we have previously alluded to them somewhat in detail in another connexion it is hardly necessary for us now to do more than to remind the student that they consist chiefly of white clay, almost pure kaolin in some beds, and that they are of middle Eocene age. The wash, or alluvium, derived from them, also makes good earth for pottery purposes. The Great Oolite Series, and especially the Fullers' Earth clay, has been used for brickmaking and burnt for ballast for many years in the neighbourhood of Bridport, at Powerstock, Crewkerne, and Bradford Abbas. At High Cross Hill, between Haselbury and East Chinnock, red and mottled or yellowish tiles, drain-pipes, and bricks are manufactured. Mr. H. B. Woodward remarks* that bricks, drain-pipes, and coarse earthenware were formerly made from the Fullers' Earth clay west of Newbury, north of Mells, in Somersetshire, but that the bricks were of inferior quality. The clay is usually calcareous, and often contains nodules of "race." In Gloucestershire, he states, it is generally too calcareous to be of service in brickmaking, though clays belonging to the Forest Marble series have, in some places, been worked for that purpose at Siddington, near Cirencester, Badminton, and Blackthorn, near Bicester.

Fenland District.

The argillaceous beds forming part of the Fen Silt in Cambridgeshire, Lincolnshire, &c., vary in colour from light to dark blue and purple, but are often mottled. The clay is generally tolerably free from sand, and is what brickmakers call "light" clay. It shrinks considerably on firing, so is always mixed with sand or warp, but even then it behaves very erratically. The following table, compiled from information contained in Mr. S. B. J. Skertchley's memoir on the area, is exceedingly useful in that connexion:—

Shrinkage of Fen Brick-earths.

Locality of Brickyard.	Size of Mould.	Size of burnt brick.	Shrinkage, per cent.
	Inches.	Inches.	
Wyberton, near Kirton	10½ to 10⅝ long.	9 long.	14·3
Boston East Brickyard	10 by 5 by 3¼	8½ by 4½ by 2⅝	27·7
Cow Bridge, Boston	10 by 5 by 3¼	9 by 4⅝ by 3	25·2
,, ,,	10 by 4½ by 3¼	9 by 3 by 3⅜	37·2
Howbridge Drain	10½ by 4⅝ by 3¼	8⅝ by 4 by 2½	38·3
Heckington, Star Fen	10⅜ by 5¼ by 3⅛	8⅝ by 4¼ by 2⅝	50·7
Holbeach (Gilder's)	10⅜ by 5¼ by 3¼	9½ by 4⅜ by 2⅝	34·6
Wisbech (Andrews')	10 by 5¼ by 3⅜	9 by 4⅝ by 2⅞	43·4
Walsoken	10 by 5 by 3	9½ by 3¼ by 2⅛	43·4

From the above it will naturally be suspected that the bricks made from the Fen silt are not of good quality as a rule. Most of them are very poor, being soft, friable, and often ill-shaped and cracked. They are generally burnt in kilns, but frequently, when farm buildings are about to be erected, the clay is dug on the spot, and the bricks are then fired in clamps. Apart from its behaviour in the kiln, this clay, Mr. Skertchley says, often contains carbonaceous markings and fragments of wood, and occasionally drifted trunks of trees. When wood is plentiful the bright blue phosphate of iron occurs in amorphous earthy lumps and streaks. Stones are exceedingly rare in it, and it is seldom stratified, but generally breaks up into rounded lumps with a glistening surface. The Boulder Clay of the Fenland, which underlies the silty clay just described, is also drawn upon for brickmaking, especially in the vicinity of Boston, where there are many brickyards in this dark blue earth.

Stamford, &c., District.

The clays of the Oolitic series are largely dug for bricks and pottery in the neighbourhood of Stamford, in Lincolnshire. The Lower Estuarine beds have been worked also for terra-cotta clays. Professor Judd notes* the following section:—

Section at Terra-Cotta Works, Stamford.

Rubbly Oolite (in patches).

Brown sand (irregular in thickness).

"Terra-cotta clay," sandy, and of a light blue colour, very irregular in thickness, 1 ft. to 4 ft.

Ironstone rock, 8 ft. to 13 ft.

Upper Lias clay.

An analysis of the "terra-cotta clay" shows that it is composed of almost pure silicate of alumina, with a little free sand in very fine grains; sandy lumps also occur in the mass, and these are ground up with the clay in the mill. This admixture of the clay with fine sand is said to greatly improve its quality. Mixed with a very small quantity of the white clay from Dorsetshire, these clays from the Lower Estuarine Series make an excellent terra-cotta, of a cream colour, and very durable. The well-known Stamford terra-cotta, manufactured by Mr. Blashfield, was made of it.

The Upper Estuarine Series in the same district consists chiefly of clays, occasionally very sandy, of various colours, with bands of sandy stone interstratified with them. Beds full of small calcareous concretions and bands of fibrous carbonate of lime also frequently occur, and in its lower part this series consists usually of white clays passing into sands. The thickness of the whole probably does not exceed 30 ft. Prof. Judd remarks (*Op. cit.*, p. 189), that the clays in this division of the Great Oolite are admirably adapted for brickmaking, for which purpose they are dug in the vicinity of Stamford, Great Oakley, Water Newton, Wood Newton. between Stanion and Brigstock, and between Pilton and Luffenham. At Wakerley a good fire-clay occurs, and at Little Bytham the lower part of the series has been worked for many years for clays, which produce bricks of singular hardness and durability. From the ringing sound which they give when struck together they have been called "clinker bricks." We quote the following section to show the extreme variability of the clays exploited:—

Brickyard Section.—Little Bytham.

Soil, 6 in.; tea-green clays, 1 ft. 2 in.; brown, sandy clay, 1 ft.; greenish clay, full of soft, white carbonate of lime, 1 ft.; variegated blue and brown sandy clay, 1 ft. 6 in.; blue clay, 6 in.; blue and brown sandy clay, 1 ft. 6 in.; bed of indurated sand with fossils, 6 in.; blue clay, slightly mottled, 4 in.; brown and blue mottled stiff clay with lumps of soft carbonate of lime, 4 in.; tea-green clay, ferruginous at base, 1 ft.; dull greenish clay, 1 ft.; lighter coloured green clay, with seams of comminuted shells and carbonaceous markings, 2 ft.; brown, shelly sand containing carbonaceous markings, parting only; black clay, 1 ft. 3 in.; lighter coloured and more compact clay, 7 in.; greenish compact clay, with ferruginous markings, 1 ft. 2 in.; greenish and dark blue clays, 1 ft. 9 in.; dark blue compact clay, 5 ft. 2 in.; brown ferruginous clay, 5 ft. 2 in.

The student can easily imagine that considerable skill is required in handling deposits so variable as these, in order that an uniform brick shall be produced; but it should not be forgotten that such a combination of different earths is rarely met with. From the estuarine character of the deposits the divers beds must be continually changing lithologically, and we should not be surprised to learn that by working into the face even for a few months, the nature of each division is not to be depended upon. At the same time, in spite of the thinning out of a bed here, the thickening of another there, and the development of "race" in clays sporadically, the aggregate, when thoroughly mixed and incorporated, does not usually, in such sections, materially vary even in the course of years of working. It may seem paradoxical to say so, but the aggregate of ever-changing beds is not usually as variable as that of a thick and tolerably homogeneous and persistent deposit of clay. A certain amount of compensation may be observed in the former, but if the latter varies at all it generally varies altogether, without compensatory elements being present.

Huntingdon District.

The clays of Huntingdonshire are also much used in brickmaking. The supply is chiefly drawn from the Oxford and Kimeridge Clays, the Gault, and, to a small extent, from superficial brick-earths. The largest brick-manufacturing centre is St. Ives. The thickness of the Oxford Clay in the district is estimated at 700 ft., and as is usual in a marine clay it is fairly homogeneous in tint and appearance throughout, though much laminated in places. It is of a grey or bluish-grey tint, selenite (hydrous sulphate of lime), and, in every case where any considerable thickness is shown, layers of limestone, or of septaria occur. These layers are seldom more than 1 ft. in thickness, but they are found at intervals of a few feet only, and are tolerably persistent over considerable distances. An enormous amount of this clay has been dug at Fenton, one mile north-west of Pidley; one section gave 16 ft. of bluish-grey clay, with crystals of selenite; another, 8 ft. of grey clay, with a hard sandy bed 6 in. in thickness in places. A large brickyard west of St. Ives yielded the following, measured in various places to get the full section:—

Brickyard Section.—St. Ives, Hunts.

Grey clay; fine purple calcareous sandstone; fine yellow ditto; blue clay; two thin beds of sandy limestone, with a parting of clay between them; blue clay; sandy limestone.

This section is much more variable in character than the Oxford Clay usually is. Brickyards in this formation also occur at Boxworth, Long Stanton, and elsewhere.

The Kimeridge Clay in the area is dark blue, somewhat shaly, and contains much selenite. The principal working in it is at Knapwell, where the section shows about 15 ft. of pyritiferous clays.

The Gault yields a good brick clay, rather stiff, which has been and is much employed in various parts of Cambridgeshire for making bricks, drain-pipes, and tiles. The bricks (with which we are more immediately concerned) do not present a very pleasing appearance, but are hard and durable.

As examples of the chemical composition of the class of clays just referred to, the following particulars may be given*, though they do not, strictly speaking, relate to the district under consideration:—

Chemical Composition of Kimeridge and Oxford Clays.

	Oxford Clay.	Kimeridge Clay.
Protoxide of iron	1·12 per cent.	2·08 per cent.
Sesquioxide of iron	3·25 ,,	4·32 ,,
Bisulphide of iron	1·10 ,,	1·42 ,,
Sulphate of lime	1·37 ,,	5·34 ,,
Carbonate of lime	—	4·28 ,,

The Oxford Clay is from brick-works at Chippenham, in the north of Wiltshire; and the Kimeridge from near Calne, in the same county, employed for coarse pottery and bricks. It may be noted that crystals of selenite were distributed throughout these clays, and that the analyses were directed principally to ascertain the nature of what might be termed the impurities in them. It is not so stated in the accounts quoted,

* "The Jurassic Rocks of Britain," vol. iv. ("Mem. Geol. Surv."), 1894, p. 492.

* "Geology of Rutland," &c. ("Mem. Geol. Surv."), 1875, p. 103.

* "Catalogue of British Pottery and Porcelain in the Museum of Practical Geology," 3rd ed. (1876), pp. 292-3.

but the remainder is evidently intended to represent the pure clay, or hydrous silicate of alumina, the proportions of which may be found by deducting the amount of iron and lime given in each case. From a manufacturing point of view it is very necessary to ascertain the state of the iron and lime as above given; in almost every clay it may be confidently stated that sulphates exist, but they are not often determined; the proportion is generally small, though it is always worth noting.

Devonshire District.

On a previous occasion (*ante*, p. 31) we alluded to the china clays of the West of England; all we now purpose to do is to say a few words respecting the earths from which the well-known fire-bricks and pottery of the neighbourhood of Bovey Tracey are made; also the terra-cotta clays of Watcombe, near Torquay. From the observations of Mr. S. Smith Harvey we learn that in the Bovey district the surface clays are principally used for making a common grey or buff brick, used locally. The white, or potter's clay, is largely used in the manufacture of stoneware pipes and sanitary apparatus, and is especially suitable for this purpose on account of its ready vitrification. The greyer, or fatter clays are used in the manufacture of paving and facing bricks of a more valuable character. The quartzose, sandy clays are made into fire-bricks; they contain from 77 to 80 per cent. of silica, and from 16 to 18 per cent. of alumina, with very small proportions of iron, lime, magnesia, and potash.

The Watcombe Clay is of post-Tertiary age, and is probably derived from the Trias of South Devon. It is a red clay, exceedingly fine and free from impurities, except those which assist in the process of fluxing. It contains about—silica 58, alumina 20·5, peroxide of iron 7·7, lime 1·6, potash 3·8, water, &c., 6·5, small proportions of magnesia and soda, and with traces of peroxide of manganese and phosphoric acid.

SURVEYORSHIP APPOINTMENT.

AT the meeting of the Harborne Charity Trustees, last week, Mr. Ralph Heaton, architect and surveyor, of Birmingham, was appointed surveyor to the estates.

GENERAL BUILDING NEWS.

MUNICIPAL BUILDINGS, BATH.—The new municipal buildings at Bath were opened on the 11th inst. As many of our readers are aware, Mr. J. M. Brydon, of London, was the architect, his plans having been selected in competition by Mr. W. Young, who acted as assessor. Illustrations or descriptions of the building will be found in our issues for December 26, 1891; January 9, 1892, and May 28, 1892. Messrs. J. Hayward & E. W. Wooster were the contractors.

NEW WILSON U.P. CHURCH, PERTH.—The memorial-stone has just been laid of the new Wilson U.P. Church, Perth. The style adopted is that of the Italian Renaissance. The lower part of the church front is divided by broad massive piers, the two side recesses containing double windows, which light the vestibules, and the central portion the main entrance-door. This is flanked by two Doric columns supporting a moulded pediment, the doorway having deeply-moulded jambs and a carved transom and lintel. The side piers of front are carried up plainly to the main pediment, and over the central piers are two Ionic columns, between which is a mullioned window with semi-circular head lighting the end gallery. Single windows, with lunettes over them, occupy the side spaces. Over the columns is the main pediment, in the upper part of which is a moulded niche, and an ornamental cross will form the terminal feature. On each side of the central front are placed the staircases, each with exit door, and treated in unison with the central feature, but simpler in detail; while on the hall-side the staircase is extended, forming a corridor to the hall-buildings, and also a connecting stair from the church. The hall entrance is marked by an octagonal turret, which contains the staircase, and is carried up in three stages, with a series of circular columns marking the angles and terminating with an ogee roof, which will be covered with copper. The hall-gable has a moulded pediment with three-light windows, and under this plain mullioned windows light the caretaker's house. The side elevations are in similar style to the front. Stone work will be largely used in the interior. The church is divided into nave and side aisles by two stone arches on each side of wide span, springing from main piers which are carried up beyond the arches to the main roof timbers. A similar arch spans the pulpit recess, and smaller arches are at each side over the organ-chambers. The roof is formed in a double cove, all the main timbers being exposed and moulded and filled in with shaped and moulded spandrels. There are side and end galleries which are to be carried on steel girders between the piers. The gallery fronts will be partly open and carved in outline between the piers. The seating space provides for 900 sittings, of which 590 are on the area floor and 310 in the galleries. In the hall buildings the main hall is placed on the first floor, and will form a room sufficient for a meeting of 400 persons, and the arrangement of staircases allows it to be reached direct from the church gallery, as well as from the church staircases and its own separate access. The ground floor of the hall block is occupied by a session hall, ladies' room, and caretaker's house, and at the rear of the church is the vestry and a kitchen. The building was designed by Mr. John B. Wilson, architect, Glasgow, and the following are the principal contractors: — Mason, Messrs. Fraser & Morton; wright, Mr. Thomas Forgan; plumber and gasfitter, Messrs. Frew & Sons; slater, Mr. James Buchan; plasterer, Messrs. J. Mackay & Son; painter, Messrs. Stalker & Boyd (all of Perth); and glazier, Messrs. Wm. Meikle & Son, Glasgow. Mr. James Murray is resident clerk of works, and the total cost will be about 9,000*l*.

THE RESTORATION OF DURHAM CATHEDRAL CHAPTER HOUSE.—On the 13th inst. the restored Chapter House of the Cathedral Church of Durham was formally handed over to the Dean and Chapter of Durham, on behalf of the Restoration Committee, by the Earl of Durham. The restored Chapter House forms part of the memorial to the late Bishop of Durham (Dr. Lightfoot). The cost of the restoration has been 5,600*l*. The Chapter House is on the site of, and of the dimensions of, the Norman Chapter House erected in the twelfth century. As restored, it is an oblong room, with a semi-circular apse at the east end, the length, including the apse, being 77 ft., the breadth 36 ft., and the height, to the crown of the vaulting, 44 ft. On a moulding over the new west doors is carved a Latin inscription from the 121st Psalm. Above the head of the archway is filled in with tracery, and has a standing figure of an angel in the centre holding a shield charged with the arms of Bishop Lightfoot impaling those of the diocese. Another inscription is in raised letters on the stone head of the small doorway leading through the ante-room into the south transept of the Cathedral. The works have been carried out from the designs and under the superintendence of Mr. C. Hodgson Fowler, F.S.A., Cathedral architect.

TOWN HALL, CLERKENWELL.—The new town-hall erected by the vestry of St. James and St. John, Clerkenwell, was opened on the 14th inst. by Lord Rosebery. It has been built by Messrs. C. Dearing & Sons, from the designs of Mr. C. Evans-Vaughan. The principal entrance is in Rosebery-avenue, and gives access to a vestibule whence corridors lead to the offices of the vestry clerk, surveyor, medical officers, &c., and to committee-rooms. The first-floor is taken up by the council chamber and the public hall. The former is a room 51 ft. long by 30 ft. wide, and has at one end a public gallery. The public hall is 66 ft. long by 42 ft. wide, and will seat 500 people. The marble mosaic pavements have been supplied and fixed by Messrs. Webb & Co., Euston-road, as well as the majolica tile dado for two staircases.

CATHOLIC CHURCH, BLACKPOOL.—The church of the Sacred Hearts in Talbot-road, Blackpool, has just been enlarged. The extensions—which double the accommodation—have been carried out at a cost of some 8,000*l*. Messrs. Pugin & Pugin, of London, were the architects.

ST. PETER'S CHURCH, ABBEYDALE, SHEFFIELD.—The new church of St. Peter, at Abbeydale, has just been consecrated by the Archbishop of York. An illustration of the building and a short description appeared in our issue for March 11, 1893. The masons', plasterers', and plumbers' work, and the seating to the nave have been executed by Mr. L. T. Wildgoose, of Sheffield and Matlock; the slating and lightning conductor by Messrs. Chadwick & Sons, of Sheffield; the glazing by Messrs. Mellowes & Co., of Sheffield; the gasfitting by the Sheffield Gas Company; the mosaic floors by Messrs. Mainzer & Co., of London; and the heating by Messrs. J. C. & J. S. Ellis, Sheffield. Mr. Atkin has throughout acted as clerk of the works, and the architect has been Mr. Joseph Norton, of Sheffield.

WESLEY HALL, LOWER EASTON, BRISTOL.—On the 15th inst. Sir W. H. Wills, M.P., laid the foundation-stone of the new Wesley Hall, Lower Easton. The new building will consist of a hall, 70 ft. by 52 ft. This will accommodate 500 adults, or 750 children, and an additional 70 or 100 in an end gallery. The two sides will be arranged for sub-division into six class-rooms (size of each, 14 ft. by 10 ft.), and separate entrances to the hall will be provided from both roads. There will be on the ground-floor, also, a room 23 ft. by 18 ft.; an infants' school, with gallery, for 120, and a small vestry. Upstairs will be two class-rooms, accommodating fifty each. The hall will have an open timber roof, and all the rooms boarded dadoes, the joinery being of pitch-pine. All the rooms will be heated by hot water. The contractors are Messrs. Wilkins & Gosling, and the architect is Mr. J. H. La Trobe.

ALTERATIONS TO ST. GILES' CHURCH, CODICOTE, HERTFORDSHIRE.—The alterations at this church are now completed. The work has been carried out by Mr. William Wade, builder, of St. Neots. The vestry-screen, choir-fronts, and altar-rail were made by Messrs. Hart, Son, Peard, & Co., of London, and the whole of the work has been executed from the designs of the architects, Messrs. Higgs & Rudkin, of London.

NEW U.P. CHURCH AT STEVENSTON, AYRSHIRE.—This new church has just been opened. It is in the Gothic style of the fifteenth century, and is seated for 450 persons. The cost is about 2,100*l*. Mr. H. J. Blanc is the architect.

FREE CHURCH, GRETNA, CARLISLE.—A new Free Church has just been opened at Gretna. The new church is situated at the junction of the Gretna-road with the Springfield-road. In form the church is rectangular, the front elevation, of which a central porch is the main feature, facing the Gretna-road; and a vestry and cloak-room are provided in a wing at the back. The building is of red stone from the quarry at Corsehill. The end wall at the back of the interior of the church is relieved by a moulded formation of chancel arch, and pierced by a rose window over the rostrum, the latter, as well as the whole of the seats, being of selected pitch-pine. Above the front porch is another rose window, and a single light pointed window is placed on either side of the porch. There are also four two-light pointed windows on each side of the church. Mr. James Rae, of Springkell, has done the builder and mason's work; Mr. A. Tweedie, of Annan, the carpenter and joiner's work; Mr. C. J. Nanson the slater's work; Messrs. J. S. Millar & Son, of Annan, the plumber's work; Mr. W. Norman, of Longtown, the plasterer's work; Mr. John McCulloch, of Annan, the painter and glazier's work; and Messrs. Cairns & Co. have fixed the heating apparatus and lamps; the whole having been carried out under the superintendence of the architect, Mr. T. Taylor Scott, of Carlisle.

RESTORATION OF MAWGAN CHURCH, CORNWALL.—The restoration of the ancient Church of St. Mawgan in Meneage has just been carried out. The architect was Mr. Edmund Sedding, Plymouth, and Messrs. Richards & Eva, of Helston, were the contractors. The marble floor in the chancel has been executed by Messrs. Goad, Plymouth, the two carved communion chairs, in dark oak, are the work of Messrs. Harry Hems & Sons, Exeter, and the glazing was by Mr. W. Smith, London. The north-west window has been enlarged to its original length, consequent on the removal of a large mausoleum belonging to the Vyvyan family, while the north-east window has been filled with glazing containing most of the different forms of the cross. Seating has been re-formed out of the higher pews of early eighteenth century type.

PARISH CHURCH, CRATHIE, INVERNESS.—The dedication of the new parish church of Crathie took place on the 18th inst. The church is built in the Early Scottish style, of white granite from the neighbouring quarry of Inver, and after designs by Mr. A. Marshall Mackenzie, A.R.S.A., of Aberdeen. The church takes the form of a cross; the nave and apse represent the shaft, while the two transepts typify the arms. The south transept is reserved for the Queen and members of the Royal Household, and the north is set apart for the heritors of the parish. In the west gable is the main door of the church. It is approached by an open porch of ornamented woodwork. A square tower rises over the building at the east end, and it is nearly 100 ft. in height, or 45 ft. above the ridge of the church-roof. The belfry is fitted with a chime of four bells.

BOARD SCHOOLS, ASPATRIA, CUMBERLAND.—New Board Schools at Aspatria have just been opened by Lady Lawson. The new schools are situated in the centre of the town, just off the main street, and will afford accommodation for 650 children. The schools have been built to the designs of Messrs. Moffat & Bentley, Whitehaven. The outer walls are of red freestone. The schools are in two departments—one for boys and girls, and one for infants. Besides the main rooms, there are large class-rooms. Messrs. Maxwell & Toppin were the contractors for the whole works, the sub-contractors being:—For the carpenters' and joiners' work, Mr. Joseph Rawlings, Aspatria; plumbing and glazing, Mr. D. Bell, Cockermouth; plastering, Mr. Altringham, Cockermouth; slating, Mr. Mandle, Maryport; painting and decorating, Mr. G. Bell, Aspatria.

ENTRANCE GATE, HOPETOUN HOUSE, SOUTH QUEENSFERRY.—There has just been completed a gateway at the South Queensferry entrance to the Hopetoun House grounds. The design was begun by Messrs. Wardrop & Anderson, architects, and completed by Dr. Rowand Anderson, who has, says the *Scotsman*, personally taken much interest in the wrought-iron work. The principal entrance consists of a gateway, 15 ft, wide, with massive piers, 22 ft. high and 5 ft. square, faced with Ionic three-quarter columns. On the top of the piers are to be placed the heraldic supporters of the Hopetoun house. Extending on each side is a crescent wing, divided into five divisions by double columns of the Tuscan order, and surmounted by a cornice. Standing on the top of a set of columns is a carved vase. Each wing is terminated by a massive pier rusticated and panelled, and at right-angles outwards to these piers on each side is a wing wall with balustrade. The total length of the crescent, which terminates at the piers, is 90 ft. The main gateway is filled with a pair of wrought-iron gates, having in the centre of

each a medallion with wreath and the Hopetoun monograms. Above the gates is an ornamental fixed part of the gateway, pyramidal in form, broken up by curved bands, foliage, and scrolls, having the monogram of the present Earl and the date 1893 worked into it, and finished off with an earl's coronet. The total height of the gateway is 22 ft. In the first division on each side of the great gateway are smaller gates, while the other compartments are filled with fixed wrought-iron grills.

SANITARY AND ENGINEERING NEWS.

PURIFICATION OF THE DEE, ABERDEENSHIRE.—The sewage irrigation works at Ballater have just been completed. The farm is 16 acres in extent, and is a mile distant from the burgh of Ballater, the normal population of which is about 1,000, rising to, perhaps, 2,500 when the summer and autumn visitors are in force. About two-thirds of the farm was arable and the remainder waste land before being levelled. A small farm (3 acres) has also been laid out lower down the river, which will be irrigated by the sewage from the village of Kincardine O'Neil, the usual population of which is about 250. Similar farms are in course of being laid out at Braemar and Aboyne. The former is 10 acres in extent, and was all agricultural ground before being levelled. The latter contains 8½ acres, one-half of which was waste land previously. These two will intercept and treat the sewage from the villages of Castleton and Auchendryne (Braemar) and Aboyne. All the four farms lie close to the river-bank, and the object is to prevent the pollution of the Dee above the intake for the water-supply of the city of Aberdeen. These farms are distant respectively about 6, 8, 20, and 36 miles from the intake at Cairnton. The subsoil of the land to be irrigated is sand and very rough gravel.

RUTHERGLEN BRIDGE, LANARKSHIRE. — The memorial stone of a new bridge over the Clyde joining Glasgow to Rutherglen has just been laid. The new bridge, which replaces an older structure erected as far back as 1775, is a granite bridge of three arches, the centre one of which has a span of 100 ft., each side-arch having a span of 90 ft. The new bridge is 60 ft. between its parapets, which permits of a roadway 36 ft. wide, with a 12-ft. pathway for passengers on either side. The foundations have been carried down to the rock, through the overlying silt and boulder clay. The piers were founded by steel caissons sunk by means of compressed air, and carried down to depths of 57 ft. and 54 ft. respectively below high-water-mark. The abutments, which are 39 ft. 6 in. from front to back, are carried on timber-bearing piles, owing to the soft nature of the banks, and are backed with Portland cement concrete, the upper portion being rubble concrete in Arden lime. The engineers of the undertaking are Messrs. Crouch & Hogg, C.E., the contractors being Messrs. Morrison & Mason, Lim., also of Glasgow. The cost of the works is estimated at 64,000*l.*

SEWAGE SCHEME, ANSTEY, LEICESTERSHIRE.—Anstey Sewage Works, Leicestershire, were opened a few days since. Four years ago it was decided that steps should be taken to carry out a new scheme, and Mr. W. H. Simpson, of the firm of Messrs. Simpson & Harvey, architects and surveyors, of Leicester, was appointed the engineer. The work was commenced in July last year. The whole of the village has been sewered, some 5,720 yards of drain-pipes, varying from 18 in. to 6 in. in diameter, having been laid. There are two bell-mouth junctions, 16 plain inspection man-holes, 17 junction chambers and man-holes, two flushing chambers and connexions to brook courses, 281 junction-pipes for house connexions, four ventilating shafts, and 20 man-holes. The sewage farm is situate about three-quarters of a mile from the village. The outfall main, which is about 1,200 yards in length, runs along the valley in close contiguity to the Anstey brook. The total area of the farm is 11 a. 3 r. 11 p. The sewage is distributed over the farm by means of carriers with level weirs, over which the sewage flows into the grips prepared for its reception in the land. There are penstocks fitted at intervals of 50 yards throughout the length of the land. The total cost of the scheme (including land, wayleaves, professional charges, &c.) has been 6,300*l.*

STAINED GLASS AND DECORATION.

WINDOW, EAST ANTONY CHURCH, CORNWALL.—Under the superintendence of Mr. George H. Fellowes Prynne, a stained-glass window has been designed and executed for a three-light window of this church in memory of William Henry Pole-Carew of Antony. The centre-light is a "Nativity," the two side-lights being "The Adoration of the Magi" and "The Shepherds" respectively, with backgrounds of colour, no landscapes or perspective being used. The whole enclosed in a setting of elaborate tabernacle work. The designing and execution were entrusted to Messrs. Percy Bacon & Brothers, of London.

WINDOWS, ST. HILDA'S CHURCH, SUNDERLAND.—Three more windows in this new church have just been dedicated. They form part of a scheme to be carried through the whole church, commencing and ending at the east window. The subject is, "I am the Vine; ye are the branches," and returning in the opposite direction in the upper lights. The artists were Messrs. Percy Bacon & Brothers, of London.

FOREIGN AND COLONIAL.

FRANCE.—On Friday last week, the Municipality of Paris organised a grand reception at the Hôtel de Ville, in honour of the visit of the Institute of Naval Architects. They had another reception at the Ministry of Marine, and an excursion on the Seine to St. Germain.——The Académie des Beaux-Arts has awarded the Houllevigue prize to M. Nenot for his work at the new Sorbonne.——An Industrial Exhibition is to open at the Palais de l'Industrie on the 25th.——There is talk of making use of the current of the Seine as a motive force for creating electricity at the 1900 Exhibition.——The Henri Mürger monument in the garden of the Luxembourg will be inaugurated at the close of this month.——The scheme for bringing the water of the Loing and Lunain to Paris is estimated to cost 25 million francs. The work will include two aqueducts from the sources, and a main aqueduct 73 kilomètres long and 2½ mètres diameter. It will furnish 180,000 cubic mètres a day.——A monument to the memory of President Carnot is to be inaugurated at Nolay on August 11. This monument was the last work of the sculptor Roulleau, and consists of a white marble pedestal, ornamented with attributes of Justice and War, and a figure holding a plaque of red marble with an inscription. On the pedestal is a group representing the late President receiving his death-blow, and "France" receiving him in her arms.——The Chamber of Deputies has under consideration a project for a railway from Etampes to Beaune-la-Rolande—about 98 kilomètres.——A "Retrospective exhibition" has been opened at Reims in the Archbishop's palace, and will continue open till July 15.——The Municipality of Creil has decided on the destruction of the Church of St. Evremond, one of the most interesting examples of early Gothic in France.——The splendid mansion in the style of the Renaissance, at Toulouse, known under the name of the Hôtel d'Assezat, built by Francis I. for Margaret of Navarre, has been sold by public auction. The purchaser is a banker of Toulouse, who, it is said, intends to present it to the city.

MISCELLANEOUS.

RAILWAYS AND CANALS IN RUSSIA.—According to some recent Foreign Office Reports it is probable that this year there will be great extensions in the railway system of Russia. A large number of projects are under examination by the Committee of Ministers, and the line connecting Pskoff with Bologoe and thus placing Riga in direct communication with Rybinsk on the Volga, will soon be definitely settled, an event which the commercial community of Riga are eagerly looking forward to for giving a fresh impetus to the trade of the port. The long-talked of project of constructing a railway from Walk to Pernau has been commenced. The line, which will be narrow-gauge and 77½ miles long, is expected to be ready for traffic by the end of the year. The town of Fellin, 30½ miles from the Moisekiill station, on the Walk-Pernau branch, will also be connected by a narrow-gauge railway. The company which has obtained the concession for these and other railways undertakes to construct them without any subsidy from the Imperial Government, but is authorised to issue bonds for two-thirds of the cost, and the capital is to be repaid on the expiration of eighty-five years, when the lines become the property of the Government, which reserves to itself the right of purchase after the first eighteen years. The company is allowed to charge a higher rate for both passengers and goods than the tariff in vogue on other Russian railways. The opening of these railways will be a great boon to the agricultural and trading classes of the provinces of Livonia and Pskoff. The old high waterway that formerly existed between the Black Sea and the Baltic is again under discussion. From the surveys lately made it appears that the route from Rybinsk to Riga is half as long again as that to St. Petersburg by the Maricen Canal system, and that the line of the Volga Düna is higher than that of the Maricen system, and therefore there can be no question of transferring the Volga trade from St. Petersburg to Riga. The cost of connecting the Dneiper with the Western Düna, and the latter with the Lovat, is estimated at 645,000*l.* The route laid down is:—Kieff to Orsha, 482 miles; Loutch-Orsha connexion, 66½ miles; Western Düna section, 37⅔ miles; Ousviat and the canal to a distance of 36½ miles; Lovat, 278½ miles; Lake Ilmen, 20 miles; Volkhoff, 134 miles; Ladoga Canal and Neva, 111½ miles; total, 1,166½ miles; which is the same route as described by Nestar, the old historian of Kieff.

IRON CASEMENT FOR OPENING EITHER WAY.—Messrs. Farrar & Co.'s iron casement, called the "in-and-out" casement, made to open outwards ordinarily, but to open inwards when desired for cleaning, is a very satisfactory one. The rebates are arranged for outward opening, but what may be called in the interior beading is a cover to the whole sash bar all round, which is hinged at the bottom, and on releasing the fastenings at the top will fall backwards towards the interior, the sash then opening inwards without obstruction. The contrivance is very simple, and seems calculated to maintain a perfectly water-tight window.

THE BRISTOL MASTER BUILDERS' ASSOCIATION have decided to visit Bridgwater and the Quantocks on the occasion of their annual outing on the 27th inst.

PERMANENT INDUSTRIAL EXHIBITION IN ATHENS.—A permanent industrial exhibition has just been opened in Athens, which is to be open every year from March 1 to June 30, and from September 15 to January 15. In addition to Greek industrial products, foreigners are admitted to exhibit articles tending to promote Greek industries.

TELEPHONE: LONDON TO BERLIN.—The Belgian Government are attempting to establish telephonic communication between Brussels and London on one side, and Brussels and Berlin on the other.

APPOINTMENT OF SANITARY INSPECTOR, TONBRIDGE.—At the monthly meeting of the Tonbridge Urban Council on the 5th inst. the Health Committee recommended that Mr. Bradley, the Inspector of Nuisances, be appointed permanently. The recommendation gave rise to a little opposition, but the motion was agreed to.

A NEW STEP IN TRANSATLANTIC EMBARKATION.—The great step just made by the railway and dock authorities at Liverpool in the direction of facilitating Transatlantic travel deserves passing notice. An extension of the railway lines to the central landing-stage has been made with a view of enabling travellers to embark immediately on the arrival of the boat trains, this being satisfactorily accomplished on Saturday last, in connexion with the sailing of the Cunarder *Campania*. The saving in point of time is evident from the fact that passengers who departed from Euston at noon had actually left port five hours later, the journey having occupied four hours and a quarter, and the transference of passengers and luggage about half-an-hour. An incoming liner, the *Umbria*, was also brought alongside the landing-stage the same evening, the passengers and baggage being disembarked with unprecedented celerity. The event naturally created the liveliest interest in Liverpool, and it is certain that travellers will regard the new method of embarkation as a most decided improvement upon the intermediary tender.

FRENCH BREWERY WELL.—A 2-in. Driven Tube Well has just been fixed at M. C. Ernout's Brewery, Pont de Nieppe, near Dunkerque, the extraordinary depth of 112 ft. from surface being reached. The perforated point forming the bottom of the well was covered with a fine perforated brass strainer, as the water-bearing bed consists of fine sand. A supply of 800 gallons per hour has been obtained, which rises close to ground level, and is connected to a direct-acting steam-pump. 7 ft. of peat, 13 ft. running sand, 49 ft. of stiff clay, and 43 ft. of sand were passed through. Messrs. Alfred Williams & Co., of London, supplied the well, and the work was carried out under the supervision of M. Georges de Geyter, Consulting Engineer at the Brewery.

ANN-STREET, POPLAR, IMPROVEMENT SCHEME.—It is announced that the London County Council have completed the arrangements in regard to property scheduled under this scheme, and that the small cottage property near the East India-road, between Brunswick-road and St. Leonard's-road, will shortly be demolished.

CARDIFF EXHIBITION.—A meeting of a special committee of the Cardiff Exhibition Committee to select plans was held on the 17th inst. at the Town-hall, Cardiff. Mr. W. Seward, architect, attended, and produced plans of the exhibition buildings, which he estimated would cost 7,500*l.* Communications were read from Mr. C. J. Jackson (Chairman of the Arts section), and Mr. D. T. Alexander (Chairman of the Horticultural section), pointing out that more space would be required if the success of those sections was to be assured. The Chairman observed that the demand for more space seemed to be general. After a discussion the plans were adopted.

BOROUGH SURVEYORSHIP, PONTEFRACT.—The Pontefract Town Council have appointed Mr. Arthur Oddy, the Assistant-Surveyor in the Borough Engineer's department, at West Hartlepool, as Surveyor and Nuisance Inspector for Pontefract, in place of Mr. James Heseltine, resigned. There were over sixty applicants.

LEGAL.

THE RIGHT TO AIR:

IMPORTANT CASE IN THE COURT OF APPEAL.

THE case of Chastey *v.* Ackland came before the Court of Appeal, consisting of Lords Justices Lindley, Lopes, and Kay, on May 17 and 18, and in which their Lordships delivered a considered judgment on Monday last, the 17th inst.

The case came before the Court on the appeal of the defendant from an order of Mr. Justice Cave, in an action tried before him at Exeter in February last, granting a perpetual injunction in a mandatory form restraining Mr. Ackland from permitting the continuance of a new building he had erected upon his freehold premises, No. 24, West Southernhay,

Exeter, so as to interfere with the access of air to No. 23, the house adjoining, of which the plaintiffs, two ladies, were the freeholders.

Mr. Cozens Hardy, Q.C., M.P., and Mr. Foote appeared as counsel for the appellant (the defendant); and Mr. Warmington, Q.C., M.P., Mr. H. E. Duke, and Mr. H. Broughton Edge, for the respondents (the plaintiffs).

Mr. Cozens Hardy, in opening the case, said that Mr. Justice Cave had granted a perpetual injunction in a mandatory form restraining the defendant from continuing his new building at a higher level than that which was replaced. The peculiarity of the case was that the learned Judge (after viewing the premises) had granted an injunction, not on the ground of an interference with the light, but, for the first time in the history of the Courts, for an interference with the access of air to the plaintiffs' premises. The defendant had, before the writ in the action had been issued, or certainly before an injunction had been applied for, erected a portion of his new building. Part of the case made on the pleadings was that there was interference with the access of light to certain windows in the plaintiffs' house, but he did not propose to deal with that then, because the learned Judge had said that there was no such interference with the light as to justify an injunction, and that 10*l.* would be sufficient compensation for any damage done in that way. But his Lordship had held that the plaintiffs had a right to the passage of air coming over the defendant's property to them, and that their house was made much more inconvenient on that account, and less valuable, and he granted a mandatory injunction requiring the defendant to pull down a building which he had erected on his own land. The question was whether the defendant was or was not entitled to erect on his own land a building which did not interfere with the ancient lights of another. It might well be that what the defendant had done might have rendered the plaintiffs' house less comfortable or less valuable, but it was for the Court to say whether it was a legal wrong for him to erect a building on his own land, which, though it did not interfere with ancient lights, might interfere to some extent with the passage of air.

Lord Justice Lindley remarked that the finding of the learned Judge in the Court below certainly pointed to the fact that he thought that there had been an interference with the plaintiffs' ancient lights.

Mr. Cozens Hardy replied that that was so; but the learned Judge had said that he would not grant a mandatory injunction for the injury done to the light, which was covered by the 10*l.* damages he awarded to the plaintiffs. What the learned Judge had said was that the plaintiffs were entitled to what he called the ventilation coming between the houses.

Mr. Foote, who followed on the same side, said that he did not dispute that there was some evidence of nuisance in the case, but he contended that there was no evidence of any nuisance on which the Court ought to act. Assuming against himself that if the new building was injurious to the health of the occupants of the plaintiffs' house that would entitle them to an injunction, his submission was that the air had not been diminished to such a degree as to involve danger to health. He felt that it would be hopeless on the question of light to ask their Lordships to reverse the decision of the learned Judge in the Court below, who had himself viewed the premises, and the defendant did not appeal against the 10*l.* damages awarded to the plaintiffs on that head. But it was no part of the plaintiffs' case that anything that the defendant did caused smell, and the learned Judge did not rely upon what he saw with regard to the air. There was attached to the Drill Hall and in the plaintiffs' own yard causes of smell.

Lord Justice Lindley: But before you erected your building there was a sufficient current of air to make it innocuous.

Mr. Foote admitted that that was possible, but submitted that even so, it would form no cause of action. The medical evidence brought forward on the part of the plaintiffs did not go to the extent of showing that what the defendant had done was injurious to health. The opinion of Mr. Woodman, the Medical Officer of Health, and of the plaintiffs' other medical experts, went to show that the new building would make the plaintiffs' house less healthy than it was before, and would account for smells and fumes finding their way into the back windows. But, in cross-examination, Mr. Woodman would not say that the plaintiffs' house had been rendered insanitary.

Mr. Warmington submitted that their Lordships would not interfere with the conclusion at which Mr. Justice Cave had arrived, after seeing the witnesses, and himself visiting the premises. Under the circumstances, the decision appealed from was no less valuable than the verdict of a jury. What the defendant had done had rendered the plaintiffs' property less wholesome, and the plaintiffs had suffered, so far as the comfort of their house was concerned, in personal discomfort. He contended that that constituted an actionable wrong, inasmuch as it was a nuisance.

Lord Justice Lopes, in reading the judgment of Lord Justice Lindley and himself, said the case, which was tried at Exeter, resulted in judgment for the plaintiffs, and an injunction restraining the defendant from maintaining a certain new building beyond a certain height, on the ground that it obstructed the light to which the plaintiffs were entitled in respect of certain ancient lights, and on the ground that it obstructed the free passage of air over and above the plaintiffs' premises, and therefore created a nuisance. So far as the loss of light was concerned the plaintiffs were awarded 10*l.* damages, but on this point there was no appeal, the appeal being in respect of the alleged nuisance. It was said that the defendant's premises prevented the carrying off of bad smells by the interruption of the free passage of air. Every man had a natural right to enjoy the air pure and free from any noxious vapours, and any man who sent foul air into his neighbour's premises ought to be restrained, but the Court could not impose upon his neighbour the obligation to keep away improper smells. He was unable to agree with the learned Judge who had tried the case that the plaintiffs had any case in connexion with the claim for nuisance. It was contended that, irrespective of the nuisance, the plaintiffs had a right to the free passage of air over and above their premises, and a right to have every disagreeable smell carried away by the current of air that would pass over the premises, which right, it was said, the defendant by his new building had infringed. There was, however, nothing to prevent the defendant building on his own land, and such a right as the plaintiffs had set up could not be supported either by the authorities or the Prescription Act, and a man was not bound to see that his neighbour had proper ventilation. In their opinion, what the defendant had done he was entitled to do, and constituted no legal wrong. In those circumstances the judgment for the 10*l.* would stand, and the defendant would pay the costs with regard to that issue, but he (the defendant) would be entitled to such costs as were incurred by the contention in respect of the air, together with the costs of that issue.

Lord Justice Kay concurred.

Lord Justice Lindley said that, considering the importance of the case, he should like to add that no one had a right to complain of his neighbour building on his own land, even though it might diminish the flow of air on the land adjoining, unless there was an immemorial right to the user, or an agreement binding the owners not to build. In the present case there was no such agreement, and the plaintiffs had failed to prove the existence of any contract binding the defendant not to build over his own land. The plaintiffs' claim to relief could not be sustained, and the defendant was entitled, and must succeed on his appeal. The plaintiff's would, therefore, have their judgment for the 10*l.* and the costs incurred on that issue, but the defendant must have the costs of the other issue, together with the costs of the appeal.

Judgment accordingly.

IMPORTANT POINT UNDER THE METROPOLITAN MANAGEMENT ACT, 1882.

THE case of the London County Council *v.* Davis came before Mr. Baron Pollock and Mr. Justice Wright, sitting as a Divisional Court of Queen's Bench, on the 13th inst., which raised the question whether a certain passage not dedicated to the public, and only leading to certain proposed artisans' dwellings was a street "for traffic" within the meaning of Section 7 of the Metropolitan Management Act 1882.

The case came before the Court in the form of a special case stated by a Metropolitan magistrate on a summons, which was taken out against the respondent for breach of Section 7 of the Act, which provides that, where it is intended to form or lay out "any road, passage, or way for building, as a street, for the purposes of carriage traffic, or of foot traffic only, in such manner that such road, passage or way, will not afford direct communication between two streets, such person shall at least three months before such road, &c., is begun to be formed or laid out, give notice of such intention to the Board." In the case of the Board declining to sanction such road, it is not to be laid out, and a penalty is imposed on any person who lays out any such road contrary to this section. It appeared that the respondent had given no such notice, and began to build certain artisans' dwellings in the rear of Hunt-street. Such dwellings were to consist of forty separate sets of chambers in two blocks, with about ten separate entrances on the ground floor on each side. Each block was to contain about 150 persons, and the buildings were to be approached from Hunt-street through a gateway to be erected at the entrance of the approach to these buildings. This approach, which was the subject of the summons, was to consist of a court or passage 200 ft. long and 20 ft. wide, with the buildings opening into it on either side. On the respondent's plan this space was called a "light area"; on that of the appellants it appeared as a "new street." This passage would not afford any communication with any street other than Hunt-street, and was intended and is for the use and convenience of the tenants of the said buildings fronting thereon. No road or passage-way had existed on the site of the passage previously. The contention of the respondent was that he had not committed any offence, because the passage was only a private entrance for the use of the tenants of the artizans' dwellings and had not been dedicated to the public. The learned magistrate dismissed the summons on the ground that the respondent had not commenced to lay out a new road, passage, or way as a street for foot traffic, as it was not intended to be used by the public, and in his opinion was not laid out as a street for foot traffic within the meaning of the Act.

At the conclusion of the arguments of counsel Mr. Baron Pollock, in giving judgment, said that he did not consider the judgment of the Court to be a decision on a question of principle, but rather on a state of facts. The magistrate had come to the conclusion that the passage was not laid out for traffic within the meaning of the Act, and in his (Mr. Baron Pollock's) opinion that conclusion must not be disturbed. Looking at the space which was here left for access to the tenements from the public street, it was a very different case from that of a way which was really laid out as a street, except that the builder had enclosed it with gates at one end or both. A builder could not thus prevent a passage which would otherwise be a street from being a street within the Act. There was no doubt that in the present case the way was a new way, and the magistrate was entitled to find for what purpose it was created. In his opinion his decision must be upheld.

Mr. Justice Wright, in concurring, said that the decision must not be taken as an authority as to what was or was not "traffic" within the Act.

The appeal was accordingly dismissed.

Mr. Horace Avory and Mr. Daldy appeared as counsel for the appellants; while Mr. Cripps, Q.C., and Mr. Scott Fox represented the respondent.

CAPITAL AND LABOUR.

STATE OF EMPLOYMENT IN MAY.—Most of the industries from which returns have been received by the Labour Department of the Board of Trade have shown, according to the *Labour Gazette*, a steady improvement in employment in May as compared with April, with the result that the percentage of unemployed in all the unions making returns has fallen from 6·5 to 6·0. The building trades are busy, and the percentage of unemployed in unions making returns has fallen from 3·3 to 2·5, compared with 3·3 per cent. in May, 1894. There were 26 disputes in the building trades during the month, 18 being chiefly due to wages questions, 5 to working arrangements, and 3 to questions of trade unionism.

LANCASHIRE FEDERATION OF BUILDING TRADE EMPLOYERS.—The first general meeting of this newly-formed Association was held at the Derby Hotel, Accrington, on the 18th inst., when Mr. John Fecitt, Blackburn, presided over about fifty representatives from Accrington, Blackburn, Bolton, Burnley, Chorley, Colne, Darwen, Nelson, Preston, and Rochdale. The Chairman, in opening the meeting, spoke of the necessity that existed for employers to organise at the present time, not only to combat more effectually combinations of the workmen when they try to impose unfair restrictions on trade, but to obtain from architects and the public generally, juster and more generous treatment. The minutes of the preliminary meetings having been read and confirmed, the report of the Provisional Committee was then presented, and was adopted and ordered to be printed and circulated. Mr. John Fecitt (Blackburn), was elected President for the ensuing year; Mr. Councillor Cunliffe (Bolton), was elected Vice-President, Mr. F. W. Briscoe (Bolton), Treasurer, and Messrs. W. Shepherd (Rochdale), and J. Hawley (Colne), Auditors, while the following form the Executive Committee:—Accrington, Mr. James Waddington, Mr. George E. Cunliffe; Blackburn, Mr. John Caton, Mr. R. Highton; Bolton, Mr. Councillor Cunliffe, Mr. F. W. Briscoe; Chorley, Mr. Joseph Catterall; Colne, Mr. James Laycock; Darwen, Mr. Councillor Cocker; Nelson, Mr. Caleb Greenwood; Preston, Mr. J. G. Christian and Mr. T. H. Kellett; Rochdale, Mr. R. Robinson. Mr. John Tomlison, of Preston, Secretary of the Master Builders' Association in that town, was elected Secretary. On the motion of the Bolton representative, it was decided to try to affiliate the Federation to the National Association of Master Builders of Great Britain. The Darwen representatives reported the settlement of the masons' strike in their town, which was approved; and after hearing the Chorley delegates, it was unanimously agreed to support the local employers in their dispute with the operative joiners. It was also decided to adopt a form of Conditions of Contract, &c., to be approved by the Committee for use in the federated towns not at present having one.

MEETINGS.

FRIDAY, JUNE 21.

Liverpool Engineering Society.—Excursion to the main sewerage works, pumping-station, and refuse-destructor of the Borough of Cambridge.

Glasgow Architectural Association.—Visit to Dalziel House, &c., Motherwell.

SATURDAY, JUNE 22.

St. Paul's Ecclesiological Society.—Visit to the churches of Hornchurch and Upminster, under the guidance of Mr. F. Chancellor, F.R.I.B.A. Train leaves Fenchurch-street at 3.50 p.m.

Institution of Junior Engineers.—Visit to Mr. Hiram S. Maxim's workshops at Baldwyn's Park, Bexley. Train from Cannon-street (S.E.R.) at 2.15 p.m.

Liverpool Engineering Society.—Excursion (concluded).

Edinburgh Architectural Association.—Annual Excursion—Mount Stuart House, Rothesay Castle, St. Blane's Chapel, Rothesay Church.

MONDAY, JUNE 24.

Royal Institute of British Architects.—(1) Sixteenth general meeting (ordinary), to present the Royal Gold Medal for the promotion of architecture to Mr. James Brooks, for his executed works as an architect. (2) A special general meeting (for members only) then to be held to receive and consider a recommendation of the Council to establish, under the provisions of the charter, a class of subscribing members, to be called "Craftsmen"; and to make and adopt by-laws which shall define, regulate, and prescribe the conditions of membership and the mode of election and admission, and the privileges, obligations, and benefits of, and the payments to be made by, the proposed new class.

WEDNESDAY, JUNE 26.

Builders' Foremen and Clerks of Works' Institution.—Half-yearly meeting of the directors. 8 p.m.

THURSDAY, JUNE 27.

Association of Municipal and County Engineers.—Annual meeting, to be held at Halifax.

FRIDAY, JUNE 28.

Association of Municipal and County Engineers.—Annual Meeting, Halifax (continued).

SATURDAY, JUNE 29.

Architectural Association.—Visit to Audley End, Essex, and to the Parish Church of Saffron Walden (see advt.).

Association of Municipal and County Engineers.—Annual Meeting, Halifax (concluded).

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

9,248.—SEWER VENTILATION: *L. Lonsdale.*—A process for the removal of poisonous air, gases, &c., from sewers, drains, and like situations. For this purpose are used, a combustion furnace, fan, blower-cylinder or other air exhausting and compressing engine. The injurious gases are drawn, by the exhausting action of the engine, along the sewers and drains to a receiver, which may be a highly-heated oven or furnace, situated near the main sewer, by which means the poisonous air in passing through becomes purified before being liberated into the atmosphere.

13,239.—BALL-COCK: *J. Templeton.*—This invention is designed to enable a full way ball-cock to close against any water pressure. The other end of the lever or rod which carries the ball is shaped like a portion of a "heart cam," and revolves on a fulcrum below the valve of the cistern and supporting it in a closed position. When the water falls in the cistern the cam is made to revolve and allow the valve to open. A similar movement in the opposite direction when the water rises closes the valve.

14,147.—PARTITIONS: *J. Golding.*—Relates to a partition for buildings to be used instead of the ordinary lath and plaster partitions. Consists of vertical tension wires having breadths of metallic lathing interwoven and secured thereto, and a body of plaster covering the whole upon both sides.

15,380.—VENTILATORS: *R. Rosoman.*—A ventilator, chiefly for railway carriages, consisting of a tube or circular case, surmounted by a dome-shaped cover, a sufficient opening being left between the case and cover for the egress of air. Around this opening a ring, >-shaped in vertical section, is supported by strips, leaving suitable space for the entrance and exit of air.

5,813.—GIRDERS: *H. Bladen and another.*—Relates to girders used for supporting floors and ceiling joists, and consists of top and bottom members, formed of T bars, which are connected together by two sets of vertical web-plates, rivetted in place by sets of rivets. The ends of the top and bottom members of the girder are preferably fitted into cast-iron shoes.

7,366.—PAINT: *H. Kolker and another.*—An invention for producing paint, suitable for metallic surfaces, from the tar or residue obtained in the manufacture of oil or fat-gas. The tar is heated to a temperature of 250 deg., so as to relieve it of all substances which boil at a lower temperature. The residue is then mixed with light hydrocarbons, such as benzine, with or without the addition of drying substances.

7,402.—VENTILATING GRATES: *M. Lander.*—Relates to the class of grates which are supplied with cold and give off warm air. The invention consists chiefly in a movable valve in connexion with the air-chamber, which controls the amount of air admitted to the room, and to give such air an upward direction. The valve is fitted with little clips or hooks at either end, which are designed to engage with the edges of the gate front and hold the valve in any position. A gauze wire screen may also be fitted behind the valve and held in position by suitable means.

NEW APPLICATIONS FOR LETTERS PATENT.

JUNE 4.—10,985, W. & R. Meigh, Kiln for Firing Pottery-ware.

JUNE 5.—11,060, B. Banks and others, Machine for Trenching, Panel Cutting, Shouldering, Tenoning, and Scribing Wood, by hand or power.—11,075, T. Daly, Window Ventilation.—11,105, A. Callister, Raising and Lowering Window Sashes, and retaining them in any desired position.

JUNE 6.—11,131, W. & N. Thomson, Water-closets, Valves, and Supply Cisterns for same.—11,132, D. Simpson and A. Cross, Hinge for Opening and Closing Window-Sashes.—11,138, W. Youlten, Reversible Sliding Windows.

JUNE 7.—11,196, J. Glendenning, Door-Knobs.—11,213, B. Hill, Extension-Ladders. 11,216, C. Lenz and J. Stumpf, Window Frames and Sashes or Casements.

JUNE 8.—11,267, W. Stark, Manufacture of Cement.—11,285, E. Bauer and F. Fried, Water-waste Preventors for Flushing Purposes. 11,294, T. Sylvester, Construction of Windows.

PROVISIONAL SPECIFICATIONS ACCEPTED.

8,095, J. Tennant and others, Gold Paint for Interior Gilding.—8,693, C. Bickerdike, Gully Cleanser.—9,290, L. Sheard, Board and Trestle Combination for Use of Paperhangers, &c.—9,836, G. Brookes, Window-fasteners.—10,106, A. Sennett, Fire-grates and Stoves.—10,142, J. Armstong, Electric Gas Lighting Devices.—10,190, G. Waterfall, Metallic Sockets for Picks.—10,255, W. Peyton, Stove or Fire-grate.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

12,418, A. Sharp, Door and Window-frame for Use in Concrete Buildings.—13,731, W. Ward, Turn-screw.—15,102, R. Haddan, Chimney-cowls.—8,812, P. Bright, Water-closets.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

MAY 30.—By *Hunter & Hunter:* Leasehold r. of 26*l.*, Kirkwood-rd., Haverstock Hill, u.t. 71 yrs., g.r. 4*l.*, 500*l.*; l.g.r. of 28*l.*, Wellesley-rd., u.t. 50¾ yrs., g.r. nil., 585*l.*; f.g.r. of 9*l.*, Gorham-pl., reversion in 70 yrs., 200*l.*; "Princess of Wales" public-house, York-rd., Wandsworth. f.g.r. of 8*l.*, reversion in 62 yrs., 435*l.*: f.g.r. of 8*l.* 8s., Ash-grove, Bethnal Green, reversion in 31 yrs., 250*l.*; l.g.r. of 13*l.*, Canterbury Mews, Newington, u.t. 48 yrs., g.r. 3*l.*, 190*l.*; l.g.r. of 21*l.*, Montpelier-pl., Knightsbridge, u.t. 32¼ yrs., g.r. 7*l.* 7s., 210*l.*; l.g.r. of 11*l.*, Bramley-st., Notting Hill, u.t. 68¼ yrs., g.r. 3*l.*, 145*l.*: 54, Rawlings-st., Chelsea, u.t. 47½ yrs., g.r. 8*l.*, r. 50*l.*, 500*l.*; 2, Westbourne-st., u.t. 26 yrs., g.r. 10*l.* 10s., r. 54*l.*, 485*l.*; 84, Akerman-rd., Brixton, u.t. 68 yrs., g.r. 7*l.*, r. 36*l.*, sold privately; 14a, Prince-st., Bermondsey, u.t. 51½ yrs. g.r. 5*l.* 17*o.*—By *Stimson & Son:* 19, 20, 21, and 22, Lorrimore-sq., Walworth, u.t. 55 yrs., g.r. 15*l.*, r. 200*l.*, 1,610*l.*; 53 to 63, Lorrimore-rd., u.t. 56 yrs., g.r. 16*l.* 15s., r. 236*l.*, 2,640*l.*; 11, Draco-st., u.t. 56 yrs., g.r. 1*l.* 5s., r. 27*l.*, 310*l.*; l.g.r. of 16*l.* 6s. 6d., Lorrimore-rd., u.t. 49½ yrs., g.r. 11*l.* 5s., 80*l.*; 45, Grosvenor Pk., Camberwell, and a g.r. of 35*l.*, u.t. 35¼ yrs., g.r. 21*l.*, 500*l.*; 49 and 50, Wilson-rd., u.t. 60 yrs., g.r. 10*l.* 14s., r. 76*l.*, 550*l.*; 173, 179 to 189 odd, Coldharbour-lane, u.t. 46¼ yrs., g.r. 15*l.*, r. 281*l.*, 2,460*l.*; 1, Cambria-rd., u.t. 46¾ yrs., g.r. 2*l.*, r. 40*l.*, 400*l.*; 1, 3, 7, 9, 11, and 13, Vaughan-rd., u.t. 46¾ yrs., g.r. 10*l.*, r. 173*l.*, 1,620*l.*; 21 and 25, Vaughan-rd.; and a g.r. of 20*l.*, u.t. 46¾ yrs., g.r. 30*l.*, 760*l.*; 1, 3, 4, and 5, Harbour-rd., u.t. 46¾ yrs. g.r. nil, r. 120*l.*, 1,380*l.*; 9 and 11, Luxor-st., Camberwell, u.t. 69¼ yrs., g.r. 12*l.*, r. 66*l.*, 525*l.*; 1 to 5, Violet-ter., Dulwich, u.t. 82¼ yrs., g.r. 25*l.*, r. 124*l.* 16s., 660*l.*; 26, Wilson-rd., Camberwell, u.t. 69 yrs., g.r. 7*l.*, r. 36*l.*, 300*l.*—By *Wilkinson, Son, & Welch* (at Brighton): 89, Buckingham-rd., Brighton, f., r. 60*l.*, 850*l.*—By *Worsfold & Hayward* (at Deal): Stone Hall House, Great Mongeham, Kent, cottage, 2 acres, f., 375*l.*

MAY 31.—By *Barton, Smith, & Co.:* "Fairbourne," King's-rd., Clapham, u.t. 25 yrs., g.r. 32*l.* 10s., 555*l.*—By *Cullerne & Co.:* 124, 126, 128, Bedford-rd., Clapham, and 133 to 141 odd, Clapham Pk.-rd., u.t. 12 yrs., g.r. 78*l.*, 435*l.*—By *J. J. Kelf:* 176, Markfield-rd., Tottenham, f., e.r. 25*l.*, 205*l.*; 136, Hoe-st., Walthamstow, f., r. 52*l.*, 450*l.*; 1 to 5, Leonard Villas, f., 1,375*l.*—By *J. Hibbard & Sons:* f.g.r. of 12*l.* 12s., Crescent-rd., Wood Green, reversion in 98 yrs., 340*l.*; 104, 106, 108, 110, Corbyn-st., Holloway, u.t. 75½ yrs., g.r. 21*l.*, r. 114*l.*, 1,105*l.*—By *A. & A. Field:* 1, 2, and 3, Hunt-pl., Mile End, f., r. 74*l.* 2s., 590*l.*; Custom-st., Victoria Docks, f., g.r. 6*l.*, 125*l.*; 5 plots of building land, Suffield-rd., Chingford, f., 50*l.*; 2 plots of building land, Walpole-rd., Woodford, f., 45*l.*—By *A. J. Sheffield:* 2, Blair-st., Poplar, f., r. 35*l.*, 300*l.*; 319, St. Leonard's-rd., u.t. 46¾ yrs., g.r. 3*l.*, 50*l.*; 14, 16, 22, and 24, Gasalee-st., f. 250*l.*; 58, Trinity-st., Leytonstone, u.t. 84 yrs., g.r. 5*l.* 5s., 150*l.*; 2, Dawlish-rd., Tottenham, u.t. 72½ yrs., g.r. 6*l.*, r. 28*l.*, 140*l.*—By *Green & Son:* 3 building plots, Kingston-rd., Norbiton, f., area ¾ of an acre, 250*l.*; a building plot, Wharncliffe-rd., Norwood, f., 25*l.*—By *Leopold Farmer:* 78, Abbey-rd., St. John's Wood, u.t. 42 yrs., g.r. 10*l.*, r. 65*l.*, 485*l.*; 76, Salisbury-st., Marylebone, u.t. 26½ yrs., g.r. 13*l.*, 195*l.*; 79 and 83, Herries-st., Kilburn, u.t. 80 yrs., g.r. 18*l.*, r. 105*l.*, 760*l.*; 33, Alma-sq., St. John's Wood, u.t. 57 yrs., g.r. 9*l.*, e.r. 55*l.*, 450*l.*; 2, 3, 6, and 7, Kilburn-sq., Kilburn, u.t. 29 yrs. g.r. 29*l.*, r. 150*l.*, 630*l.*

JUNE 5.—By *Walter Hall:* "Passy," Albacore-cres., Lewisham, u.t. 95 yrs., g.r. 5*l.* 10s., r. 30*l.*, 150*l.*; 1 and 2, Station Grove, Sudbury, u.t. 86 yrs., g.r. 10*l.*, r. 40*l.*, 250*l.*; 7 and 9, Railway-ter., u.t. 87 yrs., g.r. 11*l.*, r. 76*l.*, 550*l.*; 3 and 4, Station-grove, u.t. 86 yrs., g.r. 10*l.*, r. 47*l.*, 300*l.*—By *Millar, Son & Co.:* 32, Wellesley-rd., Kentish Town, u.t. 51 yrs., g.r. 6*l.*, 270*l.*—By *Inman Sharp, Harrington & Roberts:* 10, Bonny-st., Camden Town, l.g.r. of 55*l.* 9s. 11d., u.t. 48 yrs., g.r. 8*l.* 19s. 11d., 590*l.*; 15 plots of building land, Hertford-rd., Edmonton, f., 900*l.*

JUNE 6.—By *W. W. Jenkinson:* 11, 12, 13, and 14, Elwell-rd, Stockwell, u.t. 66¾ yrs., g.r. 12*l.*, 810*l.*; 20, 22, 28, 30, and 32, Hargwynne-st., u.t. 69¼ yrs., g.r. 25*l.* 10s., 965*l.*; 34, 36, 38, and 40, Hargwynne-st., u.t. 69¼ yrs, g.r. 21*l.*, 765*l.*—By *Marler & Bennett:* 29, St. Michael's-grove, Brompton, u.t. 32 yrs., g.r. 95*l.*, r. 150*l.*, 350*l.*; 86 and 88, The Grove, Hammersmith, f., 1,210*l.*—By *May & Rowden:* 59, 64, 66, 68, 70, and 72, Stafford-rd., Upton-pk., f., 1,120*l.*; 30, Carter-st., Walworth, u.t. 86 yrs., g.r. 6*l.* 10s., r. 30*l.*, 340*l.*; 49 and 51, Queen Margaret's-rd., Stoke Newington, u.t. 54½ yrs., g.r. 10*l.* 10s., r. 61*l.*, 500*l.*; 30, St. John's Church-rd., Hackney, u.t. 66¼ yrs., g.r. 4*l.* 16s., r. 30*l.*, 265*l.*—By *C. C. & T. Moore:* 310, Old Ford-rd., Victoria-pk., u.t. 58½ yrs., g.r. 5*l.*, e.r., 50*l.*, 470*l.*; 27 to 43 odd, Varden-st., Mile End, u.t. 11¼ yrs., g.r. 23*l.*, r. 233*l.*, 630*l.*; 13, 15, and 17, Rutland-st., u.t. 12 yrs., g.r. 6*l.*, r. 71*l.*, 280*l.*; 24, Newark-st., u.t. 12¼ yrs., g.r. 2*l.*, r. 24*l.*, 75*l.*; 13 and 15, Walden-st., u.t. 12 yrs., g.r. 4*l.*, r. 26*l.*, 100*l.*; 14 and 15, Colmar-st., u.t. 54½ yrs., g.r. 8*l.*, r. 32*l.*, 215*l.*; 7 and 8, Prospect-pl., Woodford, f., 225*l.*; 2, Station-pl., St. George's East, f., 70*l.*; 40, Langdale-st., f., 315*l.*; 26, 28, and 30, John-st., f., 650*l.*—By *Newbon & Co.:* 158, Caledonian-rd., King's Cross, u.t. 36 yrs., g.r. 10*l.*, r. 72*l.*, 350*l.*; 202, Copenhagen-st., u.t. 60 yrs., g.r. 6*l.*, r. 32*l.*, 445*l.*; 57, Albion Grove, Barnsbury, u.t. 55½ yrs., g.r. 6*l.*, r. 38*l.*, 425*l.*; 26, Atherton-rd., Forest Gate, f., e.r. 40*l.*, 570*l.*; "Rosmore," Plashet Grove, Upton Pk., f., r. 36*l.*, 375*l.*; 3 plots of building land, Plashet Grove, f., 290*l.*; 22 and 24, Rotherfield-st., Islington, u.t. 28 yrs., g.r. 36*l.*, r. 72*l.* 12s., 90*l.*; 195 and 169, Park-lane, Tottenham, u.t. 67 yrs., g.r. 9*l.* 10s., 200*l.*; 21, Wellesley-st., St. Pancras, u.t. 12½ yrs., g.r. 8*l.* 8s., 20*l.*—By *Stimson & Sons:* 109, 113, 147, 112, 114, 120, and 122, Fairfax-rd., Hornsey, u.t. 93 yrs., g.r. 35*l.*, 1,300*l.*; 175 and 176, Great Dover-st., Southwark, f., r. 90*l.*, 1,250*l.*; 2, 4, 6, and 8, Eden-rd., Norwood, f., r. 79*l.* 6s., 810*l.*; f.g.r. of 19*l.*, Knight's Hill-rd., reversion in 58 yrs., 315*l.*—By *Walton & Lee:* F.g.r. of 5*l.*, Prince of Wales-rd., &c., Kentish-town, reversion in 26 yrs., 750*l.*; f.g.r. of 6*l.*, Prince of Wales-rd. and Grafton-rd., reversion in 26 yrs., 870*l.*; f.g.r. of 24*l.*, Grafton-rd., reversion in 26 yrs., 2,325*l.*; f.g.r. of 61*l.*, Willes-rd., reversion in 26 yrs., 5,760*l.*; f.g.r. of 7*l.*, Inkerman-rd., reversion in 29 yrs., 410*l.*; f.g.r. of 38*l.*, Alma-st., reversion in 29 yrs., 2,135*l.*; "Crimea" Public House, Inkerman-rd., f.g.r. of 5*l.*, reversion in 29 yrs., 1,100*l.*; f.g.r. of 40*l.* 4s., Willes-rd., &c., reversion in 26 yrs., 3,823*l.*; f.g.r. of 12*l.*, Grafton-rd., reversion in 26 yrs., 890*l.*; f.g.r. of 10*l.*, Prince of Wales rd., &c., reversion in 37 yrs., 800*l.*

JUNE 7.—By *Jenkins & Son:* 25 to 28, John-st., Greenwich, u.t. 39 yrs., g.r. 8*l.*, 400*l.*; 15, Ennersdale-rd., Lewisham, u.t. 74 yrs., g.r. 5*l.*, r. 26*l.*, 200*l.*; 10 and 12, Tressillian-rd., u.t. 70 yrs., g.r. 11*l.* 10s., r. 91*l.*, 800*l.*—By *William Stevens:* 162, Richmond-rd., Dalston, u.t. 43½ yrs., g.r. 6*l.* 5s., e.r. 50*l.*, 380*l.*; 45, 47, and 49, Rhodeswell-rd., Limehouse, u.t. 80 yrs., g.r. 22*l.* 18., 500*l.*—By *Toplis & Harding:* 15, Netherwood-rd., Shepherd's Bush, f., e.r. 60*l.*, 600*l.*; 10 and 11, Warren-st., Pentonville, u.t. 32 yrs., g.r. 8*l.*, r. 62*l.*, 410*l.*; 16, Loughborough-pk., Brixton, u.t. 27½ yrs., g.r. 5*l.*, e.r. 36*l.*, 250*l.*—By *Montagu, Robinson, & Watson:* "Limehouse Wharf," Three Colt-st., Limehouse, f., r. 400*l.*, 4,500*l.*—By *Protheroe & Morris:* 11 acres of building land, Mawney's-rd., &c., Romford, f., 660*l.*—By *T. B. Westacott:* 159, Huddleston-rd., Tufnell-pk., u.t. 72 yrs., g.r. 7*l.* 10s., r. 44*l.*, 420*l.*—By *Stimson & Sons:* F.g.r. of 40*l.*, Cambridge-rd., Battersea, reversion in 82½ yrs., 1,085*l.*; f.g.r. of 24*l.*, Foxmore-st., reversion in 82½ yrs., 650*l.*; f.g.r. of 12*l.*, Havil-st., Camberwell, reversion in 5 yrs., 510*l.*; f.g.r. of 7*l.*, Claremont-st., North Woolwich, reversion in 84 yrs., 135*l.*; l.g.r. of 54*l.*, Marlborough Villas, Harrow, u.t. 74 yrs., g.r. 20*l.*, 570*l.*; l.g.r. of 33*l.*, Ashburton-grove, Holloway, u.t. 45 yrs., g.r. 6*l.*, 465*l.*; l.g.r. of 22*l.*, Pownall-rd., &c., Dalston, u.t. 49 yrs., g.r. nil, 385*l.*; "Royal William" public-house, Essex-rd., Islington, l.g.r. of 20*l.*, u.t. 26 yrs., g.r. nil, 305*l.*; l.g.r. of 24*l.*, Dorset-st., &c., u.t. 25 yrs., g.r. nil, 310*l.*; l.g.r. of 42*l.*, Royal-ter., Kennington, u.t. 45½ yrs., g.r. 27*l.*, 240*l.*; l.g.r. of 10*l.*, Hibbert-st., Battersea, u.t. 46½ yrs., g.r. nil, 160*l.*; l.g.r. of 9*l.*, Redmore-rd., Hammersmith, u.t. 73 yrs., g.r. 2d., 160*l.*; u.t. 33¾ yrs., 2, Colnbrook-st., Southwark, g.r. 6*l.*, 235*l.*

JUNE 10.—By *Mullett, Booker & Co.:* 32, Oxford-terrace, Hyde-park, u.t. 35½ yrs., g.r. 12*l.*, 1,000*l.*—By *Perkins & Cæsar:* 6 and 8, Harrington-rd., Norwood, f., r. 46*l.*, 630*l.*—By *Edmund Robins & Hine:* One-fifth share in 14 to 23, Edwardes-sq., Kensington, u.t. 14½ yrs., annual income 60*l.*, 320*l.*; 77, Fellow's-road, Hampstead, u.t. 69 yrs., g.r 2*l.*, r. 90*l.*, 900*l.*; "Clement's House," Clement's Inn Passage, Strand, u.t. 83 yrs., g.r. 108*l.*, r. 400*l.*, 2,800*l.*; 61, Queen's-rd., Bayswater, profit rental 35*l.* per annum for 4 yrs., 100*l.*; 410 to 416 even, Wandsworth-rd., Wandsworth, u.t. 68 yrs., g.r. 34*l.*, r. 225*l.*, 1,800*l.*; 420 to 426 even, Wandsworth-rd., u.t. 68 yrs., g.r. 34*l.*, r. 210*l.*, 1,800*l.*; 81, Regent's Park-rd., Regent's Park, f., r. 45*l.*, 605*l.*; By *Furber, Price, & Furber:* 8, Mecklenburgh-st., Bloomsbury, u.t. 22 yrs., g.r. 7*l.* 5s., r. 65*l.*, 420*l.*; 1, Torrington-st., u.t. 10½ yrs., g.r. 10*l.*, r. 55*l.*, 140*l.*; 3, Torrington-mews East, u.t. 11 yrs., g.r. 6*l.* 6s., r. 20*l.*, 40*l.*; 30 to 38 even, Church-rd., Tottenham, f., r. 71*l.* 10s., 555*l.*; 106 and 108, Boundary-rd., St. John's Wood, u.t. 55 yrs., g.r. 20*l.*, r. 130*l.*, 1,290*l.*; l.g.r. of 41*l.*, "Chester Arms" Public-house, Albany-st., u.t. 20 yrs., g.r. 5*l.*, 1,150*l.*; l.g.r. of 23*l.*, Albany-st., u.t. 20 yrs., g.r. 7*l.*, 3,135*l.*—By *Merrett & Mould:* No. 200, Gray's Inn-rd., u.t. 16¼ yrs., g.r. 36*l.*, 180*l.*—By *Rutley, Son, & Vine:* 23, 25, 27, and 29, Hamilton-st., Camden Town, u.t. 38½ yrs., g.r. 17*l.*, r. 192*l.*, 1,655*l.*; 73, Pratt-st., r. 55*l.* and l.g.r. of 18*l.*, u.t. 28 yrs., g.r. 20*l.* 300*l.*; 4, Delhi-st., King's Cross, u.t. 63 yrs., g.r. 6*l.*, r. 32*l.*, 300*l.*—By *A. H. Turner & Co.:* l.g.r. of 67*l.* 4s., Delamere-cres., Paddington, u.t. 54 yrs., g.r. 2*l.*, 1,205*l.*; 21, Stratford-pl., Oxford-st., city leasehold, g.r. 29*l.* 8s., fine 58*l.* 16s., 3,240*l.*; 26 and 28, Northampton-pk., Canonbury, u.t. 31 yrs., g.r. 3*l.*, r. 115*l.*, 825*l.*

JUNE 11.—By *W. G. Stevens & Co.:* 67, Elizabeth-st., Belgravia, profit rental of 40*l.* per annum, u.t. 13¾ yrs., 175*l.*—By *R. A. Enright:* 12, Park-lane, Stoke Newington, u.t. 71 yrs., g.r. 12*l.*, e.r. 52*l.* 10s.; 115, Graham-rd., Dalston, u.t. 66 yrs., g.r. 7*l.*, e.r. 40*l.*; 41, Spurstowe-rd., Hackney, u.t. 64 yrs., g.r. 5*l.* 10s., r. 36*l.* (sold privately).—By *Martin, Clarke, & Co.:* l.g.r. of 31*l.* 10s., Compton-st., Bloomsbury, u.t. 21½ yrs., g.r. 13*l.*, 210*l.*—By *Walton & Lee:* l.g.r. of 131*l.*, Great Stanhope-st., Mayfair, u.t. 850 yrs., g.r. nil, 4,370*l.*; l.g.r. of 42*l.* 10s., Great Stanhope-st., u.t. 850 yrs., g.r. 18*l.*, 815*l.*—By *E. & S. Smith:* 35, 37, 39, and 41, Elwood-st., Highbury, u.t. 80½ yrs., g.r. 26*l.*, r. 116*l.*, 1,000*l.*; 241, Blackstock-rd., u.t. 75 yrs., g.r. 20*l.*, r. 36*l.*, 340*l.*; 63, Palace-rd., Crouch End, u.t. 68 yrs., g.r. 7*l.*, r. 25*l.*, 220*l.*; 1 and 2, Bradley-rd., Enfield, u.t. 83 yrs., g.r. 4*l.*, 140*l.*; 59, Morecambe-st., Walworth, f., r. 26*l.*, 170*l.*; 1, Royal-ter., Sydenham, u.t. 84 yrs., g.r. 7*l.* 7s., 200*l.*; 35, Hanbury-rd., Battersea, u.t. 74 yrs., g.r. 6*l.*, r. 30*l.*, 305*l.*—By *F. J. Bisley & Sons:* 4, Old-rd., Rotherhithe, and a l.g.r. of 5*l.* 10s., u.t. 55 yrs., g.r. 8*l.*, 250*l.*; 61, Hawkstone-rd., u.t. 55 yrs., g.r. 2*l.*, 200*l.*—By *Debenham, Tewson, & Co.:* "Church Hill House," East Barnet, and 3 a. 2 r. 8 p., f., 2,850*l.*; Wood House Farm and 438 acres, Attleborough, Norfolk, f., 4,200*l.*—By *Rogers, Chapman, & Thomas:* 47, Victoria-rd., Kensington, u.t. 37 yrs., g.r. 9*l.* 17s. 6d., r. 150*l.*, 1,800*l.*; 27, Denbigh-st., Pimlico, u.t. 31 yrs., g.r. 8*l.*, r. 50*l.*, 400*l.*; 114, Cambridge-st., Belgravia, u.t. 35½ yrs., g.r. 9*l.*, 600*l.*

JUNE 12.—By *Berry, Son, & Hiscox:* 6, Lower Ranleigh-grove, Pimlico, u.t. 27 yrs., g.r. 5*l.* 10s., r. 30*l.*, 200*l.*; l.g.r. of 2*l.*, Lower Ranleigh-grove, u.t. 27 yrs., 24*l.*—By *Fortescue & Co.:* 163, Lupus-st., Pimlico, u.t. 34½ yrs., g.r. 17*l.*, r. 55*l.*, 315*l.*; f.g.r. of 32*l.*, St. Joseph's-rd., Edmonton, reversion in 76 yrs., 645*l.*; f.g.r. of 56*l.*, St. Mary's-gardens, reversion in 76*l.*, 1,060*l.*—By *W. Martin:* 3 to 15, Hadfield-ter., Peckham, u.t. 78 yrs., g.r. 68*l.* 5s., 2,345*l.*; 58, 62, 64, and 66, East Dulwich-grove, Dulwich, u.t. 81 yrs., g.r. 30*l.*, r. 128*l.*, 1,020*l.*—By *J. Lees & Burchell:* "Temple Court," Wray-pk., Reigate, stabling, and ¾ of an acre, f., 2,010*l.*—By *Oakley, Fisher, & Co.:* 42, Fitzroy-st., Marylebone, f., e.r. 75*l.*, 1,270*l.*—By *White, Berry, & Taylor:* l.g.r. of 20*l.*, Elizabeth-st., &c., Belgravia, u.t. 28 yrs.; l.g.r. of 20*l.*, u.t. 14 yrs., profit rental 56*l.* per

CONTRACTS AND PUBLIC APPOINTMENTS.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Sewerage Works, Lower Sydenham	Belfast Union	Young & Mackenzie	June 25
Four Houses, Flass, near Durham	Col. Leadbitter-Smith	T. C. Nicholson	do.
Cottage, Woodhouse Junction	Handsworth U.D.C.	J. Hardcastle	do.
Additions to Travis' School, Thorne, near Goole		H. B. Thorp	do.
*Wood Paving Works	Willesden District C.	O. Claude Robson	do.
*Turret Clock	Borough of West Ham	L. Angell	do.
Sewering, Levelling, Paving, &c. Lansford-road	St. Alban's Corp.	*Official*	do.
*Tar Paving Works	Bromley U.D.C.	do.	do.
*Paving Works	Thame U.D.C.	J. Towers	do.
School Extension, Chickenley-lane, near Dewsbury	Soothill School Board	*Official*	June 26
Granite Road Metal	North Walsham (Norfolk) U.D.C.	do.	do.
Additions to Residence, King-street	Wakefield Corp.	R. Porter	do.
Paving, &c. Bentley-street and others	Farnworth (Lancs.) U.D.C.	W. J. Lomax	do.
Pipe Sewer, &c. near Wakefield	Hemsworth R.D.C.	Mr. Richardson	do.
Board Room and Offices, near Wakefield	Hemsworth Union	do.	do.
Cast-iron Sewer Pipes	Burton - on - Trent Corp.	J. E. Swindlehurst	do.
Brick and Concrete Sewer, Hawkin's-lane	do.	do.	do.
Three Houses, Derby-street, Great Horton, Bradford	.....	S. Spencer	do.
Wesleyan Chapel, Palace-avenue, Paignton, Devon	.....	W. G. Couldrey	do.
School and Out Offices, South Kirkby, near Wakefield	.....	W. E. Richardson	do.
*Granite Pitching and Broken Granite	Mile End Old Town Vestry	J. M. Knight	do.
*Granite Spalls and Broken Granite	Hackney Vestry	J. Lovegrove	do.
Road Works, Princess-road, &c.	Branksome (Dorset) U.D.C.	S. J. Newman	June 27
Main Sewers (1,550 yds.)	Slaithwaite (Yorks) U.D.C.	Abbey & Hanson	do.
Dairy Factory, Stabling, &c. Waterloo-road, Havant	Belgravia Dairy Co. Lim.	A. E. Stallard	do.
Police Station, Parracombe	Devon Standing Joint Committee	E. H. Harbottle	do.
*Electrical Generating Station Buildings	Birkenhead Corp.	J. N. Shoolbred	do.
Arch and Buttresses, Stanley Burn Bridge, Prudhoe-on-Tyne	Northumberland C.C.	*Official*	do.
*Three Groynes	Level of Romney Marsh	do.	June 28
*Alterations to Schools	Burton-on-Trent Sch. Bd.	R. Churchill	do.
*Making-up Roads, &c.	Walthamstow U.D.C.	G. W. Holmes	do.
*Glazed Stoneware Drain Pipes	Borough of Brighton	F. J. C. May	do.
Shop and Premises, Wyre-street, Colchester	S. Balls	J. W. Start	do.
Roadmaking and Drainage Works, Newbold-road Estate, Rugby	.....	T. W. Willard	do.
Four Shops and Houses, Oxford-street, Grimsby	S. D. Newton	.....	do.
Setts and Broken Stone	Stockport R.D.C.	H. H. Turner	June 29
Additions, &c. to School	Writtle (Essex) School Board	J. Whitmore	do.
Service Reservoir, &c. Hawes, Yorks	Aysgarth R.D.C.	Rodwell & Son	do.
House at Police Station, Morpeth		Jno. Cresswell	do.
*Piling, Concrete Work, &c.	Kingston-upon-Thames Corp.	*Official*	do.
Additions to School, Langley, near Macclesfield	Sutton School Board	do.	do.
School and Offices	Kirton-in-Lindsay Sch. Board	do.	July 1
*Reconstruction of Laundry, N. W. Hosp.	Met. Asylums Board	Pennington & Son	do.
Surveyor's Materials	Chesham(Bucks)U D.C.	C. L. Whitehead	do.
Harbour Improvements, Wick, N.B.	Wick and Pulteney Harbour Trustees	J. Barron	do.
Stoneware Pipe Sewers, St. Helen's-road	Hastings Corp.	P. H. Palmer	do.
Additions, &c. to Stables and Works, near Rishton	Blackburn Corp.	G. W. Lund	do.
School, New Park, Bilton	Bilton-with-Harrogate School Board	G. Bland	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered
Schools, &c. College-row, Camborne, Cornwall	.....	S. Hill	July 1
Granite Channelling, &c.	Braintree U.D.C.	J. H. Jevons	July 2
Cast-iron Socket Water Pipes	Shanklin (I. of W.) U.D.C.	L. Colemitt	do.
*Stoneware Pipe Sewer	Tottenham U.D.C.	P. E. Murphy	do.
*Wood Paving Works	Comms. of Sewers	*Official*	do.
Cottages, Ashperton, &c.	G. W. Ry. Co.	do.	do.
*25,000 tons of Lime	LondonCountyCouncil	do.	do.
*Sewerage Works	Arundel U.D.C.	B. Latham	July 3
Sewerage and Drainage Works, near Wigan	Ince U.D.C.	R. Winstanley	do.
*Asphalte Works	Westminster Vestry	G. R. W. Wheeler	do.
Additions, &c. to Chapel, Walton-street, Aylesbury	.....	W. F. Taylor	do.
*Road Works	Southend-on-Sea Corp.	H. Harlock	do.
School Enlargements, Yaxley, Peterborough	.....	H. M. Townsend	July 4
Pipe Sewers, &c. Bradford-road	Keighley Corp.	W. H. Hopkinson	do.
*Works at Town Hall	Popiar Parish	Mr. Clarkson	do.
*New Block for Nurses, &c. Eastern Ambulance Station	Met. Asylums Board	A. & C. Harston	July 5
*Hospital, Lewisham	do.	E. T. Hall	do.
*Waterworks Extension	Bishop's Stortford U.D.C.	R. S. Scott	July 6
*Sanitary Work and Repairs at Workhouse	Paddington Guardians	E. H. Sim	July 7
School, Crossflat, N.B.	Paisley School Board	T. G. Abercrombie	July 8
*School and School House	Gt. Ressington School Board	*Official*	do.
Kerbing, Channelling, &c. Morris-street	Arnold (Notts.) U.D.C.	do.	do.
Street Works, Scunthorpe, Doncaster		R. A. Robertson	July 9
*Tar Paving at Eight Schools	West Ham Sch. Bd.	Newman & Jacques	do.
*Cleaning, Repairs, &c. Eleven Schools	do.	do.	do.
*Gas Engineering, &c. Holbrook-road Schools	do.	do.	do.
*Enlargement of Post Office, Lowestoft	Coms. of H.M. Works	*Official*	do.
*Painting Works, &c. at Infirmary	Paddington Guardians	E. H. Sim	do.
*New Hostel, Bangor	Women's Hostel Co.	Grierson & Bellis	July 10
*Painting, &c. at Workhouse	Stepney Union	G. E. Holman	July 11
Shops and Vestibule at Market	Birkenhead Corp.	C. Brownridge	July 13
*Art Galleries	Glasgow Association for the Promotion of Art and Music	Douglas, Hunter, & Whitson	July 18
*School Buildings, Tidal Basin	West Ham Sch. Bd.	Newman & Jacques	July 23
Pair Semi-detached Villas, Benton, near Newcastle-on-Tyne	H. Detchon	Liddle & Browne	No date
Granite Kerbing, &c. Kingsthorpe-road	Kingsthorpe(Northants) U.D.C.	J. Ingram	do.
*Annex to Asylum	Cheshire Co. Lunatic Asylum	Grayson & Ould	do.
Police Station, Seaforth, near Liverpool	Lancs. Standing Joint Committee	*Official*	do.
*Three Pairs of Cottages, West Molesey	.....	.....	do.
*Superstructure, Chelsea	British Institute of Preventive Medicine	A. Waterhouse & Son	do.
*Public Hall, Institute, &c. &c.	W. P. Hartley	F. W. Dixon	do.
*Alterations to Town Hall	Manchester Corp.	A. Waterhouse & Son	do.
*St. Mark's Church, Plumstead (1st part)	.....	R. J. Lovell	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Clerk of Works	Accrington Corp.	2*l.*	June 29
*Manager of Properties on Improvement Scheme Area	Birmingham City Council	300*l.*	July 1
*Highway and Drainage Surveyor	Hull Corp.	200*l.*	July 4

Those marked with an asterisk (*) are advertised in this Number. ***Contracts*, pp. iv., vi., vii., viii., *and* ix.** ***Public Appointments*, pp. xx. *and* xxii.**

annum for 15 yrs., g.r. 10*l.*, 1,500*l.*; profit rental 54*l.* per annum, Elizabeth-st., for 15 yrs., 850*l.*—By *S. B. Clark & Son:* 51, Portland-place, Marylebone, and stabling, u.t. 35 yrs., g.r. 230*l.*, 2,850*l.*—By *Douglas Young:* 40, 42, 44 and 48, Buckleigh-rd., Streatham, u.t. 85 yrs., g.r. 21*l.*, r. 150*l.*, 1,430*l.*; 234, Camberwell-rd., Camberwell, u.t. 25½ yrs., g.r. 5*l.* 6s. 8d., e.r. 50*l.*, 450*l.*—By *Glasier & Sons:* 57, Gloucester Gardens, Hyde Park, u.t. 43½ yrs., g.r. 18*l.*, r. 170*l.*, 1,800*l.*—By *Hards & Bradly:* 29 and 31, Michel-dever-rd., Lee, u.t. 86 yrs., g.r. 15*l.*, r. 84*l.*, 1,050*l.*; 1 to 6, Union-terrace, Deptford, u.t. 10 yrs., g.r. 12*l.*, 90*l.*; 10, 12, 14, 20 and 22, Bridge-st., Greenwich, u.t. 12 yrs., g.r. 60*l.*, 50*l.*; 24, Chester-st., u.t. 13 yrs., g.r. 1*l.* 18s. 6d., r. 24*l.*, 75*l.*; f.g.r. of 29*l.*, Hassendean-rd., Blackheath, reversion in 83 yrs., 740*l.*; f.g.r. of 29*l.* 15s., Robert-st., Plumstead, reversion in 57 yrs., 775*l.*—By *E. & S. Smith:* 35a, Manchester-st., King's Cross, u.t. 47½ yrs., g.r. 7*l.* 7s., r. 34*l.*, 250*l.*; 48 and 49, Dennis-st., u.t. 47 yrs., g.r. 8*l.*, r. 83*l.* 4s., 540*l.*; 25 and 27, Sidmouth-st., u.t. 61 yrs., g.r. 16*l.*, 210*l.*—By *Dyer, Son, & Hilton* (at Blackheath): "Rose Villa," Burnt Ash-rd., Lee, u.t. 61 yrs., g r. 9*l.*, 500*l.*; 4, Woodlands-rd., Blackheath, u.t. 30 yrs., g.r. 35*l.*, r. 65*l.*, 205*l.*; 8 to 18 even, The Vale, u.t. 76 yrs., g.r. 40*l.*, 1,980*l.*; 11 and 12, College Place West, Greenwich, u.t. 23 yrs., g.r. 8*l.*, r. 34*l.* 4s., 175*l.*; 133, 135, and 137, Shooter's Hill-rd., Blackheath, profit rental 62*l.* for 13 yrs., 100*l.*; three houses in Meadowcroft-rd., Lee Green, u.t. 89 yrs., g.r. 13*l.* 10s., 510*l.*—By *Worsfold & Hayward* (at Sandgate): "Castle House," Sandgate, Kent, f., 700*l.*; block of stabling and 2 cottages adjoining, f., 460*l.*; "Lymington House," f., 200*l.*

JUNE 13.—By *Chesterton & Sons:* 1, Campden Hill-rd., Kensington, u.t. 59 yrs., g.r. 8*l.*, r. 130*l.*, 1,850*l.*; 16, Phillimore Mews, u.t. 59 yrs., g.r. 4*l.*, r. 50*l.*, 700*l.*; 13, Campden-grove, u.t. 48½ yrs., g.r. 6*l.* 10s., r. 75*l.*, 950*l.*—By *G. Head & Co.:* l.g.r. of 81*l.*, Ladbroke-rd., Notting Hill, u.t. 40½ yrs., g.r. 15*l.*, 1,105*l.*; 7, Walton-pl., Brompton, l., r. 72*l.*, 800*l.*; 9, St. George's-ter., Herne Bay, f., r. 40*l.*, 550*l.*—By *Heaps, Son, & Reeves:* 89, Tufnell Pk.-rd, Holloway, u.t. 69 yrs., g.r. 9*l.*, r. 45*l.*, 350*l.*—By *J. R. Thornton:* Enclosure of land, 20a. 1r. 15p., Slinfold, Sussex, with farm buildings and homestead, f., 500*l.*—By *Ventom, Bull, & Cooper:* 30, Sugden-rd., Battersea, u.t. 90 yrs., g.r. 7*l.*, r. 32*l.*, 275*l.*; 48a, High-rd., Kilburn, u.t. 96 yrs., g.r. 45*l.*, r. 240*l.*, 2,900*l.*; 52, High-rd., u.t. 93 yrs., g.r. 50*l.*, r. 250*l.*, 2,900*l.*; 52a, High-rd., u.t. f., r. 275*l.*, 4,160*l.*—By *Newbon & Co.:* 49, 51, 53, and 55, Mildmay Pk., Stoke Newington, f., r. 211*l.*, 3,085*l.*; adjoining No. 55, Mildmay Pk., stable premises, f., r. 12*l.*, 100*l.*; 755, Commercial-rd., Limehouse, f., r. 34*l.*, 450*l.*; "Woodside," Linkfield-lane, Redhill, Surrey, and 3 acres, u.t. 50 yrs., g.r. 18*l.*, r. 247*l.* 10s., 2,875*l.*—By *C. C. & T. Moore:* 12 to 18 (even), Stepney Green, Mile End, u.t. 16 yrs., g.r. 80*l.*, r. 157*l.*, 225*l.*; 42, Tetley-st., Poplar, u.t. 47 yrs., g r. 2*l.* 10s., 170*l.*; 28, Bishop's-rd., Victoria Pk., u.t. 6 yrs., g.r. 6*l.*, r. 32*l.*, 65*l.*; 67, Chisenhale-rd., Old Ford, u.t. 53 yrs., g.r. 4*l.* 4s., 260*l.*; 20, Elsdale-st., Hackney, u.t. 56 yrs., g.r. 5*l.*, 240*l.*; 20, Norfolk-rd., Dalston, u.t. 66 yrs., g.r. 6*l.*, r. 32*l.*, 310*l.*; i.g.r. of 4*l.* 10s., Andrey-st., Hackney, u.t. 14 yrs., g.r. nil, 30*l.*; f.g.r. of 1*l.* 8s., Harold-st., &c., Bethnal Green, reversions in 25 yrs., and in A.D. 2727, 50*l.*; 121, Morville-st., Bow, u.t. 52 yrs., g.r. 3*l.* 5s., 170*l.*; 321 and 323, Burdett-rd., Mile End, u.t. 45 yrs., g.r. 9*l.*, r. 76*l.*, 495*l.*; "Retreat Villa," Canewdon-rd, Southend, and plot of land, f., r. 25*l.*, 400*l.*—By *Farebrother, Ellis, Clark, & Co.:* 128, Harley-st., Marylebone, and stabling, u.t. 23½ yrs., g.r. 22*l.*, r. 235*l.*, 2,325*l.*; "Southborough Lodge," Southborough-rd., Bickley, Kent, and 26 a. 3 r. 23 p., f., 8,000*l.*; enclosure of orchard land, Blackbrook-rd., 2 a. 3 r. 9 p., f., 650*l.*; 64, Bromley Common, f., r. 16*l.*, 525*l.*—By *Stimson & Sons:* 25, and 29, Fanthorpe-st., Putney, u.t. 88 yrs., g.r. 12*l.*, r. 60*l.*, 400*l.*; 59, Lavender-sweep, Battersea, u.t. 86 yrs., g.r. 7*l.*, r. 34*l.*, 320*l.*; 94, Camberwell-grove, Denmark Hill, f., r. 65*l.*, 1,600*l.*; 60 to 72, even, Azenby-sq., Peckham, u.t. 72 yrs., g.r. 27*l.* 10s., 1,210*l.*; 156 to 162 even, Camberwell New-rd., Camberwell, u.t. 8 yrs., g.r. 24*l.*, r. 138*l.*, 200*l.*; 65, Kidbrook-pk-rd., Blackheath, u.t. 70 yrs., g.r. 14*l.*, e.r. 90*l.*, 600*l.*—By *Debenham, Tewson & Co.*; 40, Upper-st., Islington, f., r. 168*l.*, 3,855*l.*; "Woodthorpe," Sydenham Hill-rd., Sydenham, and 10 acres, part leasehold, u.t. 31 yrs., g.r. 20*l.*, and part freehold, 2,000*l.*; "Andrew Hill Cottage," Hedgerley, Bucks., and 5 a. 3 r. 32 p., f., 300*l.*—By *Osborn & Mercer:* States Farm and 55a. or. 33 p., near Henley-on-Thames, f., r. 46*l.*, 3,400*l.*; 4 enclosures of land, 48 a. or. 32 p., Medmenham, f., 2,500*l.*; The Abbey Hotel, Stabling, &c., 3 a. 1r. 34 p., f., r. 146*l.*, 6,200*l.*; two enclosures of land, 36a. 1r. 34p., f., 6,450*l.*; enclosures of land, 19 a. 2 a. 30 p., f., 1,020*l.*; four cottages, f., e.r. 20*l.* 16s., 475*l.*; "The Cottage" and o a. 1r. 22 p., f., r. 38*l.*, 810*l.*; an enclosure of orchard ground, 1a. 1r. 1p., f. 16*l.*; three cottages, f., f.r., 12*l.* 28*l.*; four enclosures of land, 48a. or. 28 p., f., 1,720*l.*; two cottages, f., e.r. 11*l.*, 425*l.*; two enclosures of land, 5 a. 3 r. 7 p., f., 350*l.*; four cottages and blacksmith's shop, f., r. 16*l.*, 420*l.*; a cottage and enclosure of land, 19a. 2r. 5p., f., 1,110*l.*; "Dog and Badger," public-house, stabling and cottage, f., e.r. 30*l.* 12s., 2,050*l.*; five cottages, f., r. 17*l.* 2s., f., 510*l.*; lodge, farm and 25 a. 2 r. o p., f., 1,550*l.*; an enclosure of land, 50 a. o r. 29 p., f., 1,150*l.*; enclosure of woodland, &c., Hambledon, 130 a. 1 1. 32 p., f., 725*l.*; 2 cottages and blacksmith's shop, Skirmett, f., 150*l.*; an enclosure of pasture land, o a. 3 r. 7 p., f., 65*l.*; an enclosure of arable land, 8 a. 1 r. 19 p., f., 200*l.*; "Flint Hall" and 116 a., f., 2,500*l.*

JUNE 14.—By *G. W. Dixon & Co.:* "Dudley Lodge," Springfield-rd., Wallington, f., 1,100*l.*—By *C. C. Taylor & Son:* F.g.r. of 18*l.* 15s., Canterbury-rd., Old Kent-rd., reversion in 71 yrs., 410*l.*; 23 to 25, and 28 to 30, Ledbury-st., Peckham, and a ground rent of 6*l.*, u.t. 66½ yrs., g.r. 31*l.*, 855*l.*—By *Reynolds & Eason:* 14, 16, and 18, West-st,, Mile End, f., r. 59*l.* 16s., 460*l.*; 39 and 41, Norman-rd., Bow, u.t. 64 yrs., g.r. 7*l.*, r. 48*l.*, 385*l.*—By *Baker & Sons:* "Gold Digger's Arms" Beer house, Albert-rd., Peckham, f.g.r. of 6*l.*, reversion in 69 yrs., 165*l.*; f.g.r. of 25*l.*, Albert-rd., reversion in 71 yrt., 645*l.*; f.g.r. of 8*l.* 8s., St. George's-st., reversion in 53½ years., 215*l.*; f.g.r. 19*l.*, Frampton-rd., reversion in 58½ yrs., 475*l.*; f.g.r. of 25*l.*, Gordon-ter., reversion in 95½ yrs., 715*l.*; f.g.r. of 9*l.* 10s., Sedgmoor-pl., reversion in 22½ yrs., 265*l.*; f.g.r. of 18*l.*, Coppleston-rd., reversion in 80½ yrs., 485*l.*; f.g.r. of 33*l.*, Crichton-rd., Wandsworth, reversion in 70 yrs., 875*l.*; 22, Middleton-rd., Battersea, u.t. 48½ yrs., g.r. 5*l.* 10s., r. 39*l.*, 230*l.*; f.g.r. of 45*l.*, Upland-rd., Dulwich, reversion in 90 yrs., 1,285*l.*; "Belle Vue," High-st., Harrow, f., r. 80*l.*, 1,230*l.*—By *Beale & Capps:* 224, Portobello-rd., Notting Hill, u.t. 68 yrs., g.r. 8*l.*, r. 70*l.*, 800*l.*; plot of land, St. Charles-pl., Kensington, f., 70*l.*; 53, Cambridge-gardens, Notting Hill, and 37, Thorpe Mews, u.t. 68 yrs., g.r. 1*l.*, r. 78*l.* 12s., 610*l.*; 13, Bevington-rd., u.t. 69 yrs., g.r. 7*l.*, r. 28*l.*, 195*l.*; 4, All Saints'-rd., Westbourne Pk., u.t. 69 yrs., g.r. 8*l.*, r. 40*l.*, 270*l.*; 221, Portobello-rd., Notting Hill, and stables, f., r. 75*l.*, 1,120*l.*; 25, Burghley-rd., Kentish Town, u.t. 68 yrs., g.r. 1*l.*, r. 48*l.*, 480*l.*—By *Phillips, Lea, & Co.:* 30, 30A, 32, 32A, 34, 34A, 36, 36A, 38, 38A, and 40, Hampshire-st., Camden Town, u.t. 49 yrs., g.r. 5*l.*, 1,285*l.*; 2, 4, 6, and 8, Teale-st., Hackney, and "Prince of Wales" beer-house, u.t. 15 yrs., g.r. 35*l.*, 720*l.*—By *G. A. Wilkinson & Son:* 25, Belmont Pk., Blackheath, u.t. 57 yrs., g.r. 3*l.*, 550*l.*

[*Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I.	load	10/0/0 16/0/0
Sequoia, U.S. ft. cu		1/0 2/0
Ash, Canada	load	2/15/0 4/0/0
Birch, do.		2/5/0 3/10/0
Elm, do.		3/10/0 4/15/0
Fir, Dantsic, &c.		1/15/0 3/10/0
Oak, do.		2/15/0 4/15/0
Canada		6/0/0 7/10/0
Pine, Canada red		0/0/0 0/0/0
Do. Yellow		2/15/0 5/0/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg		5/0/0 6/10/0
Wainscot, Riga, &c., log		3/0/0 5/5/0
Odessa, crown		3/0/0 5/5/0
Deals, Finland		
2nd & 1st std	100	7/0/0 8/10/0
Do. 4th & 3rd		7/0/0 8/0/0
Do. Riga		7/0/0 8/0/0
St. Petersburg, 1st yellow		9/10/0 12/0/0
Do. 2nd yellow		7/10/0 9/0/0
Do. white		8/0/0 9/10/0
Swedish		7/0/0 15/10/0
White Sea		7/10/0 15/0/0
Canada, Pine 1st		22/0/0 24/0/0
Do. do. 2nd		16/10/0 17/10/0
Do. do. 3rd, &c.		8/5/0 10/10/0
Do. Spruce, 1st		9/0/0 10/10/0
Do. do. 3rd and 2nd		6/10/0 7/10/0
New Brunswick		6/0/0 7/0/0
Battens, all kinds		5/0/0 21/0/0
Flooring boards, sq., 1 in. prep. 1st		0/9/6 0/14/6
Do. 2nd		0/6/6 0/11/6
Other qualities		0/4/6 0/7/6
Cedar, Cuba	ft.	/3 /4
Honduras, &c.		/3 /4½
Mahogany, Cuba		/3½ /6
St. Domingo, cargo av.		/3½ 1/0
Mexican do. do.		/3 /4
Tobasco do. do.		/3½ /6
Honduras do.		/3½ /5½
Box, Turkey	ton	4/0/0 15/0/0
Rose, Rio		7/0/0 16/0/0
Bahia		6/0/0 15/0/0
Satin, St. Domingo		0/0/5 0/1/0

TIMBER (*continued*).		
Satin, Porto Rico		0/0/6 0/1/6
Walnut, Italian		0/0/2½ 0/0/7
METALS.		
Iron—Pig, in Scotland	ton	2/3/4 0/0/0
Bar, Welsh, in London		5/12/6 5/15/0
Do. do. at works in Wales		5/2/6 5/5/0
Do. Staffordshire, in London		6/0/0 6/10/0
COPPER—British cake and ingot		45/0/0 45/10/0
Best selected		46/0/0 46/10/0
Sheets, strong		52/0/0 0/0/0
Chili bars		42/6/3 42/11/3
YELLOW METAL		0/0/4½ 0/0/4⅝
LEAD—Pig, Spanish	ton	20/10/0 0/0/0
English com. brands		10/8/9 10/11/3
Sheet, English, 6 lbs. per sq. ft. and upwards		11/10/0 0/0/0
Pipe		12/0/0 0/0/0
ZINC—English sheet	ton	18/10/0 0/0/0
Vieille Montagne		19/10/0 0/0/0
TIN—Straits		62/0/0 62/10/0
Australian		62/15/0 63/5/0
English Ingots		65/0/0 66/10/0
Banca		64/0/0 64/10/0
Billiton		63/10/0 64/0/0
OILS.		
Linseed	ton	21/10/0 21/17/6
Cocoanut, Cochin		24/10/0 24/15/0
Do. Ceylon		22/15/0 0/0/0
Palm, Lagos		23/0/0 0/0/0
Rapeseed, English pale		23/0/0 0/0/0
Do. brown		21/5/0 21/10/0
Cottonseed ref.		18/0/0 18/5/0
Oleine		20/10/0 21/10/0
Lubricating, U.S.		5/9/0 8/6/0
Do. black		4/6/0 6/6/0
TAR—Stockholm	barrel	1/0/0 1/0/6
Archangel		0/15/6 0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.*]

ABERDEEN.—Accepted for the erection of pavilion, &c., for the Town Council. Mr. John Rust, City Architect, 224, Union-street, Aberdeen :—

Masonry.—Pringle & Slesson	£839 0 0
Carpentry.—George Jamieson	485 0 0
Plumbing.—John Blaikie & Son	763 10 0
Plastering.—Stephen & Gibb	287 17 0
Slating.—George Cullie	95 6 8
Painting and Glazing—George Donald & Sons	65 0 0
Bellhanging.—James Tindal	11 0 0
Iron.—Jas. Abernethy & Co.	41 13 9
Engineering.—Wm. McKinnon & Co.	112 0 0
Total	£2,700 7 5

[All of Aberdeen.]

ABERDEEN (N.B.).—Accepted for the erection of public school buildings, Craigton, Peterculter, for the School Board. Messrs. Ellis & Wilson, architects, 181A, Union-street, Aberdeen. Quantities by architects :—

Masonry—Robert Buchan	£3,287 2 2
Carpentry.—Jas. Garvin & Sons	
Slating.—McGregor Rhind	
Plastering.—Stephen & Son	
Plumbing.—Wm. Horne	
Painting.—Masson & Son	

[All of Aberdeen.]

ALDEBURGH (Suffolk).—Accepted for alterations and additions to "North Lodge," Aldeburgh, for Mr. John Driver. Mr. T. E. Key, architect, 5, Bloomsbury-square, W.C., and Aldeburgh :—
G. O. Knowles, Aldeburgh £1,310

BEESTON (Notts.).—Accepted for re-forming, &c., Dagmar-and-Thyra-grove, for the Urban District Council. Mr. W. Walker, surveyor, Middle-street, Beeston :—
Thos. Smart, Trent Bridge, Nottingham £179 2

BOURNEMOUTH.—For building residence, on the West Cliff, for Mr. E. Howard May. Messrs. Creek, Gifford, & Oakley, architects, Bournemouth :—

Entwistle & Cox	£3,550	George & Harding	3,355
W. Hoare	3,465	W. J. Chinchen	£3,300
Kitcher Bros.	3,440	M'William & Son	3,299
Jones & Son	3,386	Jenkins	3,227
Davies & Lambert	3,370	F. Hoare & Son	3,162
Brown & Son	3,362	Lucas	2,994

[All of Bournemouth.]

BRISTOL.—For alterations and additions to the Oldland Common British School, for the Bitton School Board. Mr. Wm. S. Bernard, Architect to the Board, 3, St. Stephen's Chambers, Baldwin-street, Bristol. Quantities by the Architect :—

J. Baston	£2,700 0 0	J. Browning	£2,200 0 0
E. King & Son	2,594 0 0	C. W. Long	2,200 0 0
Enos Gay	2,570 0 0	Adams & Jefferies, Oldland*	2,178 14 7
E. F. Woodward	2,340 0 0	W. Field & Son	2,170 0 0
E. Walters	2,300 0 0	S. Williams	2,160 0 8
G. H. Wilkins	2,270 0 0		
E. Clark	2,230 0 0		

* Accepted.

BUSHEY (Herts.).—For alterations and additions to Haydon Hill, for Mr. R. Percy Attenborough. Mr. A. Ernest Taylor, architect, 12, Buckingham-street, Strand, W.C. :—

Lascelles & Co.	£6,321	Smith & Co.	£5,837
Stanley J. Bird	6,059	William Downs (accepted)	5,722
Holland & Hannen	5,856		

CLEETHORPES (Lincs.).—For the erection of public hall, &c., for the Public Hall Company. Mr. John R. Withers, architect, Shrewsbury :—

Nutley & Mashford	£4,594 14 3	M. Grant	£3,092 18 2
Ion & Lewis	4,337 7 3	J. M. Thompson & Sons	2,937 0 0
James Leafe	3,395 0 0	J. H. Vickers, Nottingham*	2,708 0 0
Hewins & Goodhand	3,347 6 11		
G. Jacksaw & Sons	3,125 0 0		

* Accepted.

COLNE (Lancs.).—For the erection of stables, Guysyke-lane, for Messrs. Lancaster & Andrews. Mr. Geo. Bower, architect, 1, Dixon's-chambers, Market-street, Colne :—

Masonry.			
J. & M. Hawley	£535 0	Isaac Bancroft, Earby, near Skipton-in-Craven*	£542 0
Richard Penwarden	525 15		
Joinery.			
J. Riddivugh & Co.	£145 10 0	Horsfield & Jackson, Colne*	£127 14 6
Alfred Carter	139 5 8		
Isaiah Watson	130 0 0		
Slating.			
William Stanworth, Burnley*	£60 7 6	Ormerod Whittaker	£58 8 4
Plumbing.			
Dyson Bros., Colne*	£18 0		

* Accepted.

CULLOMPTON (Devon.).—For the erection of a carriage portico for Mr. A. Abid, Dulford House, near Cullompton. Mr. Sydney J. Wilde, architect, Weston-super-Mare :—

J. L. & H. Steer	£760	W. M. Dubin, Weston-super-Mare*	£639
J. Deering & Sons	735		
Picks Bros.	675		

* Accepted.

[These tenders include cost of carving and Mansfield stone.]

EAST BARNET.—For alterations and additions to the "Prince of Wales" public-house, East Barnet, Herts., for Messrs. Savill Bros., Ltd. Mr. Fred. A. Ashton, architect, 3, Crooked-lane, E.C. :—

J. & H. Cocks	£305	L. & W. H. Patman	£287
C. North	292	Hearle & Farrow (accepted)	283

EAST GRINSTEAD.—For supplying road materials, for the Urban District Council. Mr. Wm. Willis Gale, Surveyor :—

	s.	d.	
Quenast Stone.			
C. M. Manuelle, Lime-street, E.C.	13	6	per ton.
Flints.			
Wm. Hudson, Brighton	7	5	per yd.
T. & D. Scott, Upper Warlingham	6	8	,,
Ragstone.			
Wm. Hudson, Brighton	8	4	per yd.
Horscroft & Mills, Bowers-lane, Maidstone	8	0	,,
Benstead & Sons, Maidstone	8	0	,,
Joseph Gabriel, Belvedere-road, S.E.	7	10½	,,

EGHAM.—Accepted for erecting house at Cooper's Hill, Egham, for Mr. R. J. Wood. Mr. Ernest Newton, architect, 4, Raymond's-buildings, Gray's Inn, W.C. :—
J. Bottrill & Son, Reading £1,380 10
[No competition.]

FENTON (Staffs.).—Accepted for the supply of 2,000 tons Leicestershire paving setts, for the Urban District Council. Mr. S. A. Goodall, Surveyor, Town Hall, Fenton :—

Cliffe Hill Granite Co., Ltd., Markfield	£1	2	6 per ton.
Mountsorrel Granite Co., Ltd., Loughborough	1	2	9 ,,

FRILSHAM (Berks.).—Accepted for erecting three labourers' cottages at Frilsham, Berks, for Sir Cameron Gull, Bart. Mr. S. Gambier Parry, architect, Connaught Mansions, Victoria-street, S.W. Quantities by Messrs. Northcroft, Son, & Neighbour, Charing Cross :—
J. Bottrill & Son, Reading £695
[No competition.]

HALIFAX.—Accepted for additions, &c., to St. Augustine's School. Messrs. Chas. Horsfall & Son, architects, Lord-street Chambers, Halifax :—

Masonry.—H. Jenkinson, Queen's-road, Halifax	£198 4 0
Carpentry and Joinery.—J. Mansley, Pellon-lane, Halifax	136 16 4
Plastering and Slating.—Blackburn & Davenport, Hyde-park road, Halifax	63 0 0
Plumbing and Glazing, &c.—J. H. Bolton, Gibbet-street, Halifax	39 0 0
Heating.—J. H. Bolton, Gibbet-street, Halifax	20 0 0
Lighting and Ventilating.—Bedford & Co., Halifax	32 17 6

HENLEY-ON-THAMES.—Accepted for additions, &c., to school buildings, for the Nettlebed School Board. Mr. S. C. Johns, architect, Wallingford :—
E. Holly, Nettlebed, Henley-on-Thames £579 10

ILFORD (Essex).—For the completion (nave, aisles, and porches) of St. Clement's Church. Messrs. J. E. K. & J. P. Cutts, architects, 34, Maiden-lane, Covent Garden :—

Taylor & Son	£5,437	A. Porter	£5,287
Holloway Bros.	5,370	Dove Bros.	5,185
J. S. Hammond	5,359	Perry & Co.	5,185
Harris & Wardrop	5,350	A. Brown	4,900
W. Watson	5,300	S. C. Parmenter	4,810

IPSDEN (Oxon).—For building country house for Mr. G. C. Arding, Ipsden, Oxon. Mr. S. C. Johns, architect, Wallingford :—
Brasher & Sons, Oxon, Wallingford £911 0

LAUNCESTON.—For the execution of road improvement works, for the Town Council. Mr. James Harwood, surveyor :—

Nicholas Robins	£311 10 9	John Finney, Launceston*	£277 14 5
Wm. Duke	275 19 10		

* Accepted.

LEYTON (Essex).—For the construction of pipe sewers, &c., Markhouse and Leabridge-roads, for the Urban District Council. Mr. Wm. Dawson, C.E., Town Hall, Leyton. Quantities by engineer :—

T. Adams	£1,292 16 0	W. Wadey & Co.	£1,178 18 0
C. W. Killingback & Co.	1,254 0 0	G. Wilson	900 10 6
		J. Jackson, Leyton*	888 0 0

[Engineer's estimate, 1,095.]
* Accepted.

LLANDAFF.—For erecting billiard-room at Bryn Taff, Llandaff, for Mr. David Morgan. Mr. Geo. E. Halliday, architect, 14, High-street, Cardiff. Quantities by Mr. John W. Rodger, 14, High-street :—

James Allan	£540	F. S. Lock	£470
Knox & Wells	527	Shepton & Sons	470
Williams & Thomas	486	E. Turner & Son (accepted)	468

[All of Cardiff.]

LONDON.—For pulling down, rebuilding, and fitting up "The Earl of Derby" public-house, Station-road, Forest Gate, E., for Mr. Alderman Fielder. Mr. Fred. A. Ashton, architect, 3, Crooked-lane, E.C. :—

	Building.	Fittings.	Total.
H. Wall & Co.	£2,609	£589	£3,198
A. Reed & Son	2,398	650	3,048
W. Shurmur	2,352	615	2,967
Heale & Farrow	2,239	610	2,949
W. Watson	2,360	568	2,928
J. & H. Cocks	2,298	595	2,893
W. J. Maddison (accepted)	2,279	583	2,783

LONDON.—For new workshops at the Brewery, Stratford, E., for Messrs. Savill Bros., Ltd. Mr. Fred. A. Ashton, architect, 3, Crooked-lane, E.C. :—
J. & H. Cocks ..... £558 | Hearle & Farrow* £545
* Accepted.

LONDON.—For the erection of a recreation and gymnasium hall at Mayford Industrial School, for the London County Council :—
W. H. Lascelles & Co. £698

LONDON.—For alterations and additions to the "British Lion" public-house, West Ham-lane, Stratford, E., for Mr. W. Foulger. Mr. Fred. A. Ashton, architect, 3, Crooked-lane, E.C. :—

A. Reed & Son	£1,498	Hearle & Farrow	£1,447
H. Wall & Co.	1,475	W. Watson	1,425
W. Shurmur	1,462	J. & H. Cocks	1,394

LONDON.—For alterations and additions to the "Victoria Tavern" public-house, Burdett-road, Mile End, E., for Messrs. Holt & Co. Mr. Fred. A. Ashton, architect, 3, Crooked-lane, E.C. :—

Hearle & Farrow	£2,855	J. & H. Cocks	£2,508
W. Watson	2,658	C. North	2,293
H. Wall & Co.	2,655	C. Holland	2,279
W. Shurmur	2,639		

LONDON.—For rebuilding the "Britannia" public-house, High-street, Camden Town, N.W., for Mr. T. J. Wakley. Mr. Horace M. Wakley, architect. Quantities by Mr. H. Dow-White :—

Spencer	£2,952	Gould & Brand	£2,754
Patman & Fotheringham	2,816	Toms	2,749
Stimpson & Co.	2,798	Aney	2,740
Lamble	2,776	Dearing	2,559

LONDON.—For sundry alterations, &c., to the "Pied Horse" public-house, Chiswell-street, E.C., for Mr. Clement Stewart. Mr. H. Dow-White, architect and surveyor :—

Lascelles	£1,725	Coles	£1,670
Edwards & Medway	1,717	Burman	1,665
Holloway	1,698	Aney	1,595
Toms	1,692	Gould & Brand	1,595
Goodall	1,675	Dearing	1,495
Spencer	1,675		

LONDON.—For pulling down and rebuilding "The Black Dog" public-house, Vauxhall-walk, S.E., for Mr. F. Linfield. Mr. John C. Jackson, architect, Town-hall Chambers, Borough. Quantities supplied :—

Williams & Son	£3,767	Coulsell Bros.	£3,373
Falkner	3,543	Edwards & Medway*	3,159
Downs	3,447		

* Accepted.

LONDON.—For the construction of brick and pipe sewers, manholes, gullies, &c., Haggerston District, Section Nos. 3 and 4, for the Vestry of the Parish of St. Leonard, Shoreditch. Mr. T. Ridyard Roscoe, Engineer and Surveyor to the Vestry :—

	Section 3. £ s. d.	Section 4. £ s. d.
E. Iles	6,250 1 8	4,756 4 9
T. G. Dunmore, 32, The Broadway, Crouch End, N.	4,810 16 1*	4,869 11 0
John Jackson	5,143 19 7	4,439 13 3
Geo. Bell	5,318 8 8	4,347 19 7
C. W. Killingback & Co.	5,389 4 1	4,041 8 5
Jas. E. Bloomfield	7,077 14 5	5,814 10 3
Wilkinson Bros.	5,730 0 0	4,970 0 0
Wm. Wadey	—	4,917 1 4
John Shumm	5,678 7 0	5,595 13 3
Thos. Adams, G. E. Ry. Depôt, Wood Green, N.	5,763 10 11	4,039 0 0*
Engineer's estimate	5,279 7 11	4,870 3 9

* Accepted.

LONDON.—For the painting and decorating of the interior and exterior of the Town Hall, Old-street, E.C., for the Vestry of the parish of St. Leonard, Shoreditch. Mr. T. Ridyard Roscoe, Surveyor to the Vestry :—

Jno. Grace & Son	£1,288 0	E. Harland & Son	£878 10
J. Chessum & Sons	1,049 0	J. V. Kiddle & Sons	793 0
J. J. Rayment & Son	1,023 0	Campbell, Smith, & Co.	788 0
Chas. Stolle	949 10	Graham & Banks, 445, Oxford-street, W.*	625 0
J. J. Lewen	880 0		

* Accepted.

LONDON.—For rebuilding Catholic schools, Parliament-street, Bethnal Green, for the Rev. Father Gaggan. Mr. Francis Tasker, architect, 2, John-street, Bedford-row :—

Kerry	£1,300	Calman	£1,053
Gough & Co.	1,084	Browning	996
Harper	1,060	Beer & Gash	992

LONDON.—For sundry alterations to the "Railway Tavern, Greyhound-lane, Streatham Common, for Mr. C. Laceby. Mr. Richard Dickinson, architect, 5, John-street, Adelphi, W.C. :—

Turtle & Appleton	£1,562	Orton	£1,227
Walker	1,333	Edwards & Medway	1,223
Johnston	1,290	Street	1,165
Beer & Gash	1,273		

LONDON.—For building a house in Kidderpore-avenue, Hampstead. Mr. Arthur Keen, architect, 4, Raymond-buildings, Gray's Inn :—

Mr. Bailey	£1,500	H. G. Davenall	£1,375
Mattock Bros.	1,412	F. & E. Cooper (accepted)	1,374

LONDON.—For paving works at roadway between Amhurst-road and Down's Park-road, for the Hackney Vestry. Mr. Jas. Lovegrove, C.E., Town Hall, Hackney :—

	Carriageway Paving Per sup. yd. s. d.	Grooving to Carriageway Per sup. yd. s. d.	Footway Paving Per sup. yd. s. d.
Haynes Bros.	8 0	0 6	5 0
Victoria Stone Co.	7 4	0 3	4 0
Imperial Stone Co., Lim.	6 6	0 3	4 0
A. C. W. Hobman & Co.	5 11	0 9	4 3
W. Garstin & Sons	5 0	2 0	7 0
Patent Indurated Stone Co.	5 9	0 5	3 11
Litho Paving Co.	5 8	0 7	3 5
W. B. Wilkinson & Co.	5 6	0 6	4 6
W. Bardell	5 6	0 9	3 6
Patent Paving and Construction Co.	5 4	0 6	3 2½
M. Macleod & Co.	5 1	0 6	3 11
J. Mowlem & Co.	5 0	1 0	3 6
W. Adamson	4 11	0 3	3 6
Jones's Annealed Concrete Co.	4 10	0 2	3 9
Hindley & Co., 4, Corporation-street, Manchester (accepted)	4 8	0 6	3 2

LONDON.—For repairs, painting, and sundry works to the offices of the *Daily Chronicle*, in Fleet-street and Salisbury-court, E.C. Mr. Henry L. Florence, architect. Quantities by Mr. J. F. Ball :—

Charteris	£1,324	Simpson & Son	£1,144
Colls & Sons	1,157	Killby & Gayford	1,087
Worsley & Co.	1,147	W. Cubitt & Co.*	† 1,029

* Accepted.
† Exclusive of wall tiling, £186; and ventilation, £70.

LONDON.—For alterations and repairs to "The Bull and Mouth" Tavern, Hart-street, Bloomsbury, W.C., for Mr. J. G. Ohlson. Messrs. Dear & Winder, architects. Messrs. Herils & Wrightson, surveyors :—

Patman & Fotheringham	£1,300	Aney	£1,063
Courtney & Fairbairn	1,103	Gould & Brand	968

LONDON.—For pulling down and re-building "The Cricketers" public-house, Wellington-street, Camden-town, N.W., for Messrs. Courage & Co. Mr. Alfred J. England, architect. Quantities by Mr. Jos. Rookwood :—

Todd	£4,805	Harris & Wardrop	£4,645
Patman & Fotheringham	4,680	Gould & Brand	4,482
Killby & Gayford	4,657	Toms	4,289

LONDON.—For the erection of river-side premises, Pickle Herring-street, Southwark, for Messrs. Wm. France & Co., Limited. Messrs. Barnes-Williams, Ford & Griffiths, architects, 24, Railway Approach, London Bridge, S.E. :—

Downs	£10,142	Johnson	£9,212
White & Co.	9,715	H. G. Williams	9,180
Hall & Beddall	9,554	Faulkner	9,066
Colls & Sons	9,531	Balaam	9,065
F. & H. F. Higgs	9,525	Wm. King	9,060
Ashby & Horner	9,517	Shepherd, Bermondsey (accepted)	8,598
Greenwood	9,262		

LONDON.—Accepted for re-erection of premises, Walworth road, for Messrs. W. & P. Macowan :—
John Marsland £1,895

LONDON.—Accepted for the erection of workshops at the Union Workhouse, Gordon-road, Peckham, for the Camberwell Union Guardians :—
J. O. Richardson, Albert Works, Peckham £2,586

MANSFIELD (Notts.).—For additions and alterations to school buildings, for the Managers of St. Peter's Schools. Mr. Aug. H. Potter, architect, 45, Westgate, Mansfield :—

Bradley & Roe	£655	H. T. Baker	£599
W. Bains	645	Fisher Bros., Mansfield*	515

* Amended tender accepted.

MIDSOMER NORTON (Somerset).—For the supply and delivery of water-pipes and fittings (Section A) for the districts of Clandown and Welton, for the Urban District Council. Mr. W. F. Bird, Surveyor, Market Hall, Midsomer Norton. Quantities by Surveyor :—

D. H. Porter	£422 0 0	Clay Cross Co.	£319 18 3
Spittle, Ltd.	328 17 6	Biggs, Wall, & Co.	314 5 0
Laidlaw & Sons	327 14 9	Blakeborough & Sons	305 8 9
Stanton Iron Co.	325 10 10	Glenfield Iron Co., Kilmarnock*	294 12 7
Watson, Gow, & Co.	323 13 11		

Trenching, Jointing, Laying Mains, Making Connections.

Biggs, Wall, & Co.	£279 1 6	W. A. Catley, Midsomer Norton (Somerset)*	£192 12 0
John Peattie	276 0 2		
D. H. Porter	276 0 0		
L. Green	268 3 4		

* Accepted.

NEWPORT (Mon.).—For the erection of schools, Maindee, for the Rev. M. Bailey. Mr. F. R. Bates, architect, 4, Commercial-street, Newport :—

Charles Lock	£2,230 0	W. A. Linton	£2,140 0
Edwyn Richards	2,219 0	A. S. Morgan & Co.	2,099 0
Wm. Price	2,175 0	J. Monks & Co.	2,067 7
Chas. Wilkins	2,158 0	Dyson Parfitt (accepted)	1,994 0

[All of Newport.]

PETERBOROUGH.—For the erection of dwelling-house, New England, for Mr. Cole. Mr. J. G. Stallebrass, architect, North-street, Peterborough. Quantities by architect :—

Bailey	£300 0	Binder	£265 0
Pape	280 0	Jellings	258 0
Nichols	277 0	Guttridge	250 0
Sibley	275 10	Gray	247 0
Cracknell	267 0	Watson (accepted)	235 0

[All of Peterborough.]

POOLE.—For supplying 1,100 tons broken Guernsey granite, for the Town Council. Mr. John Elford, Borough Surveyor, King-street, Poole :—

	Per ton. s. d.		Per ton. s. d.
Sandell & Co.	10 9	W. Griffiths	10 5
L. Sommerfield	10 5	Mowlem & Co	10 3
G. La Maitre	10 5	A. & F. Manuelle, London*	10 1

* Accepted.

PORTMADOC (N. Wales).—Accepted for alterations, &c., to the Metropolitan Bank buildings. Messrs. T. Roberts & Son, architects, Portmadoc :—
Robert Roberts, Criccieth £307 10

POTTERS BAR.—For additions to schools, Little Heath, Potters Bar, Herts., for the Building Committee. Mr. J. K. Manning, architect, Milkwood Estate Office, Herne Hill, S.E. Quantities by the architect :—

Holliday & Greenwood	£497	J. Warboys	£425
J. Hunt	475	W. Groom	400
Willmott & Son	430		

PURTON STOKE (Wiltshire).—For erecting school at Purton Stoke, Wilts. Mr. W. H. Read, architect, Swindon :—

T. Barrett	£690 0 0	G. Wiltshire	£647 0 0
J. Williams	675 0 0	J. Shailes	505 0 0
H. C. Smith	674 15 9	E. Barnes, Purton*	500 0 0

* Accepted.

ST. MARY CRAY (Kent).—For restoration of side windows, &c., of St Mary's Parish Church. Mr. Arthur Vernon, architect, 29, Cookspur-street, London :—

Samuel Page	£239	Robert A. Lowe	£229
Thomas Knight	235	J. Potter (accepted)	200

SHREWSBURY.—For paving, &c., Trinity-street, for the Corporation. Mr. W. C. Eddowes, Borough Surveyor, The Square, Shrewsbury :—
John Brown, Shrewsbury, at schedule of prices.

STRATTON ST. MARGARET (Wiltshire).—For extending vagrant wards at the Union Workhouse, Stratton St. Margaret, Wilts. Mr. W. H. Read, architect, Swindon :—

J. Williams	£595 0 0	G. Wiltshire	£575 15 0
T. Barrett	584 17 6	Looker, Stratton*	558 10 0

* Accepted.

TADCASTER.—For the supply of 4,000 tons of Whinstone, and 4,000 tons of limestone, for the Rural District Council. Mr. Thomas Scott, Surveyor, Aberford, Leeds :—

	Per ton. s. d.		Per ton. s. d.
George Hodsman, York	10 9	John Hunt, Leeds	10 9
Ord & Maddison	10 9	Green, Silsden	10 9

TUNSTALL (Staffs.).—For extension of Victoria Institute, for the Tunstall Urban District Council. Mr. A. R. Wood, architect, Tunstall :—

Cartledge	£2,520	Cope	£2,148
Yoake & Goodwin	2,250	Godwin	2,110
Smith	2,194	Brayford, Tunstall*	2,051

* Accepted.

TWYFORD (Berks.).—Accepted for the extension of Endall's Manor House, Twyford, for Mr. Percival F. Tuckett. Mr. John Belcher, architect, 20, Hanover-square. Quantities by Mr. R. C. Gleed, 5, Adelaide-place, London Bridge, E.C. :—
J. Bottrill & Son, Reading £3,234
[No competition.]

WALLINGFORD.—For country house for Mr. A. D. Wells, Letwell, Wallingford. Mr. S. C. Johns, architect, Wallingford :—
E. Holly, Nettlebed, Henley-on-Thames.....£1,837 10

WELLINGBOROUGH.—For the erection of buildings at the gasworks, for the Burton Latimer Gas Company, Limited. Mr. J. T. Lewis, engineer, Gasworks, Wellingborough :—

C. Lewis	£1,233	A. J. Ball	£990
A. Lewis	1,200	George Henson, Wellingborough (accepted)	975
W. Goodman	990		

WESTON-SUPER-MARE (Somerset).—For the erection of a coach-house and stables, at "Shirley," Ellenborough Park-road, for Mr. S. L. Wansbrough. Mr. Sydney J. Wilde, architect, Weston-Super-Mare :—

G. Sprake	£197 10	Wm. Dubin*	£193 5
C. Taylor	194 0		

* Accepted.

WESTON-SUPER-MARE (Somerset).—Accepted for the purpose of altering two villa-residences, Clarence Park-road, for the erection of a school, for Mr. W. Franklin. Mr. Sydney J. Wilde, architect, Weston-super-Mare :—
W. M. Dubin £1,060

WIMBLEDON.—Accepted for the erection of a house in Wimbledon Park, for Mr. J. W. Howett. Mr. Wm. Radford, architect, Sheffield :—
J. Horrocks £3,415

WREXHAM.—For additions to school buildings, Pentre, for the Broughton School Board. Mr. J. E. Lash, architect, 5, Temple-row, Wrexham. Quantities by the architect :—

Turner Bros.	£1,216 11 3	Harrison & Griffiths	£945 0 0
W. E. Samuel	1,130 0 0	P. Jones	936 0 0
Thos. Williams	1,089 0 0	Williams & Wychesley, Ffrwd, Wrexham*	930 0 0
S. Moss	1,079 0 0		
E. Probert	1,033 5 0		

* Accepted.

YORK.—Accepted for the erection of Wesleyan Chapel, &c., Strensall, for the trustees. Mr. Edwd. Taylor, architect, 7, Stonegate, York. Quantities by architect. Work let in two divisions :—

Div No. 1.
Creaser, Strensall £312 4*

Div. No. 2.
Mansfield, York..... 310 0

* With pinnacles.

TO CORRESPONDENTS.

W. D. (below our limit).—G. F. C. (ineligible for insertion).—W. C. G.—R. A. R.—S. S. P.—J. L. F. (amounts should have been stated).

We are compelled to decline pointing out books and giving addresses.

NOTE.—**The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.**

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied DIRECT from the Office to residents in any part of the United Kingdom, at the rate of 19s. per annum PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, &c., 26s. per annum. Remittances (payable to DOUGLAS FOURDRINIER) should be addressed to the publisher of "THE BUILDER,' No. 46, Catherine-street W.C.

PUBLISHER'S NOTICES.

***Registered Telegraphic Address*, 'THE BUILDER,' LONDON.**

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS.
Six lines (about fifty words) or under ..... 4s. 6d.
Each additional line (about ten words) ..... 0s. 6d.
Terms for series of Trade advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c., may be obtained on application to the Publisher.

SITUATIONS WANTED.
FOUR Lines (about thirty words) or under..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.
PREPAYMENT IS ABSOLUTELY NECESSARY.

***** Stamps *must not* be sent, but all small sums should be remitted by Cash in Registered Letter or by Postal Orders, payable to DOUGLAS FOURDRINIER, and addressed to the Publisher of "THE BUILDER," No. 46, Catherine-street, W.C.**

Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the front Page should be in by TWELVE noon on WEDNESDAY.

SPECIAL.—ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before 10 a.m. on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

PERSONS Advertising in "The Builder," may have *Replies addressed to the Office, 46*, Catherine-street, Covent Garden, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES, { NINEPENCE EACH. By Post (carefully packed), 1s.

W. H. Lascelles & Co.,

121, BUNHILL ROW, LONDON, E.C.

Telephone No. 270.

HIGH-CLASS JOINERY,
LASCELLES' CONCRETE
Architects' Designs are carried out with the greatest care.
CONSERVATORIES,
GREENHOUSES,
WOODEN BUILDINGS,
Bank, Office, & Shop Fittings.
CHURCH BENCHES & PULPITS.

ESTIMATES GIVEN ON APPLICATION.

SUBSCRIBERS in LONDON and the SUBURBS, by prepaying at the Publishing Office, 19s. per annum (or 4s. 9d. per quarter), can ensure receiving "The Builder," by *Friday Morning's Post*.

THE "BUILDER" CATHEDRAL SERIES

ENGLAND AND WALES.

In each case—EXTERIOR VIEW, specially drawn for this series, GROUND PLAN, to a large scale, shaded to indicate the date and style of the several parts; DESCRIPTIVE ARTICLE, with sketches of details, &c.

*1. Canterbury	9. Norwich	17. Llandaff	24. Truro
*2. Lichfield	10. Rochester	18. Oxford	25. St. David's
*3. St. Alban's	*11. Lincoln	19. Southwell	*26. York
*4. Peterboro	*12. Gloucester	20. Worcester	*27. Ripon
*5. Wells	13. St. Paul's	21. Bangor and	*28. Chester
*6. Exeter	14. Hereford	22. St. Asaph	29. Manchester
*7. Salisbury	*15. Chichester	*23. Winchester	30. Carlisle
8. Bristol	16. Ely		*31. Durham

*Post-free FOURPENCE-HALFPENNY each, except 1, 2, 3, 4, 5, 6, 7, 11, 12, 15, 25, 26, 27, 28, and 31, the numbers of "THE BUILDER" containing these being OUT OF PRINT; but reprints of the VIEW, PLAN, AND DESCRIPTION OF CANTERBURY, LICHFIELD, ST. ALBAN'S, PETERBOROUGH, WELLS, EXETER, SALISBURY, LINCOLN GLOUCESTER, CHICHESTER, WINCHESTER, YORK, RIPON, CHESTER, and DURHAM, can be had, price 1s. each. Postage and packing of reprints extra; single sets, 2d. or the fifteen sets together, 9d.

[The whole series (including reprints) 20s, post-free, 21s. 6d.]

SCOTLAND.

1. Glasgow	4. Kirkwall	6. Dunblane	8. St. Andrews
2. Edinburgh	5. Iona	7. Dunkeld	9. Brechin
3. Aberdeen			10. Elgin.

Price 4½d. each, or the complete Series 3s. 4d. post-free.

IRELAND.

1 St. Patrick | 2. Christchurch | 3 Kilkenny.

Price 4½d. each, or the complete Series 1s. 1d. post-free.

THE ABBEYS OF GREAT BRITAIN.

1894.		1895.	
1. Westminster	JAN.	8. Fountains	JAN.
2. Rievaulx	JULY.	9. Tynemouth	FEB.
3. Glastonbury	AUG.	10. Malmesbury	MARCH.
4. Croyland	SEPT.	11. Netley	APRIL.
5. Whitby	OCT.	12. Bolton	MAY.
6. Bath	NOV.	13. Lindisfarne	JUNE.
7. Tewkesbury	DEC.	14. Furness	JULY.

Post-free FOURPENCE-HALFPENNY each.

THE REREDOS, ST. PAUL'S

(15 in. by 11½ in.), on stout paper, for framing, 6d.; by post, 8d.

PORTFOLIOS

for Preserving the Plates unfolded, 2s. 6d.; by post, 3s.

London Publisher of "THE BUILDER," 46, Catherine-street, W.C.

THE BATH STONE FIRMS, Ltd.

BATH,
FOR ALL THE PROVED KINDS OF
BATH STONE.
FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

DOULTING STONE.

CHARLES TRASK & SONS,
(THE DOULTING STONE COMPANY),
DOULTING, SHEPTON-MALLET.
London Agent:
E. A. WILLIAMS, 16, Craven-st., Strand, W.C.

HAM HILL STONE.

The attention of Architects is specially invited to the durability and beautiful COLOUR of this material. Quarries well opened. Quick despatch guaranteed. Stonework delivered and fixed complete. Samples and estimates free. Address, The Ham Hill Stone Co., Norton, Stoke-under-Ham, Somerset. London Agent: Mr. E. A. Williams, 16, Craven-st., Strand, W.C. [ADVT.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.

SPRAGUE & CO.

LITHOGRAPHERS AND PRINTERS.
Estate Plans and Particulars of Sale promptly executed.
4 & 5, East Harding-st., Fetter-lane, E.C. [ADVT.

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch.
METCHIM & SON, 20, Parliament-st. S.W.
"QUANTITY SURVEYORS' TABLES AND DIARY, For 1895, price 6d. post 7d. In leather 1/- Post 1/1 [ADVT.

PILKINGTON & CO

(ESTABLISHED 1838),
MONUMENT CHAMBERS,
KING WILLIAM STREET, LONDON, E.C.

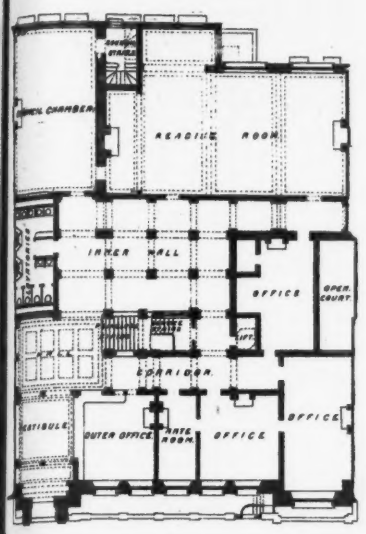
Registered Trade Mark,

Polonceau Asphalte.

PATENT ASPHALTE and FELT ROOFING.
ACID-RESISTING ASPHALTE.
WHITE SILICA PAVING
SEYSSEL ASPHALTE.

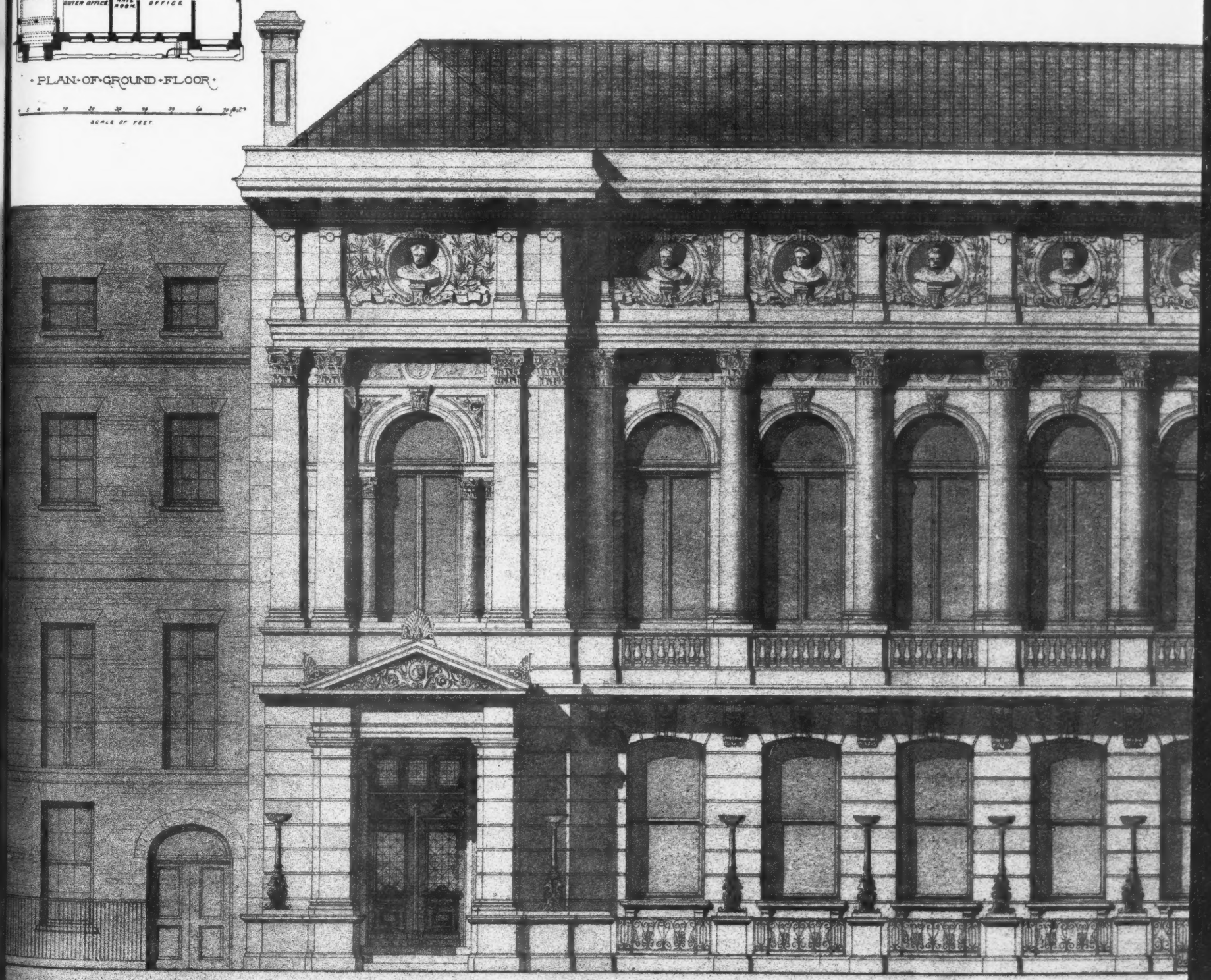
· THE · INSTITUTION · OF · CIVIL · ENGINEERS ·

Charles Barry, Archt.
1895



· PLAN · OF · GROUND · FLOOR ·

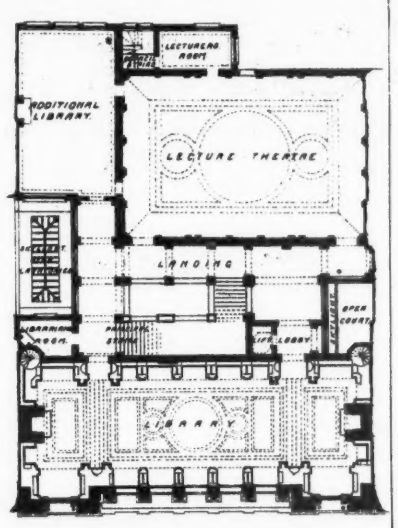
SCALE OF FEET



Stephen Ayling
Del.

· ELEVATION · TOWARDS · GREAT · GEORGE ·

Scale of Feet

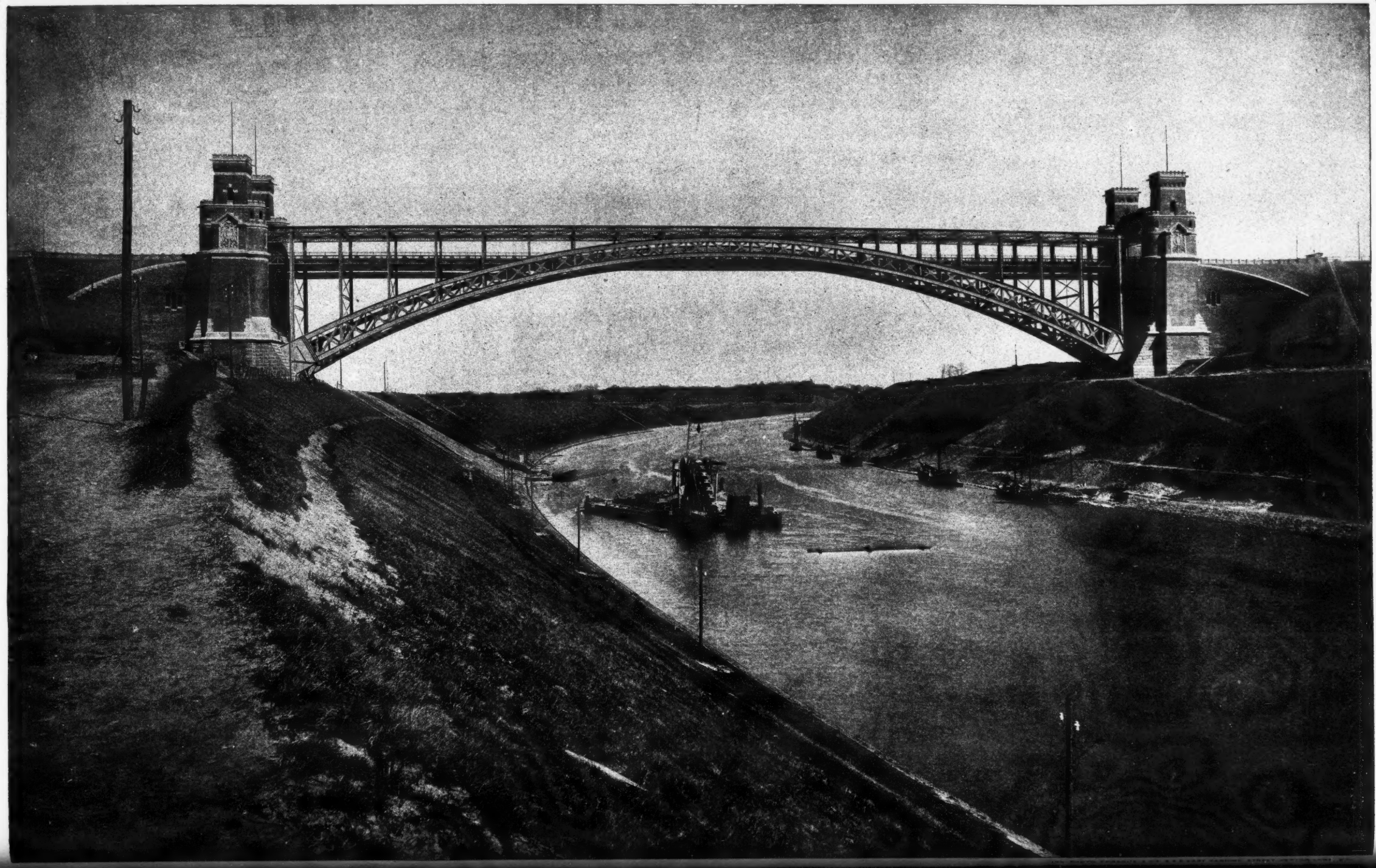


PLAN OF FIRST FLOOR

S · GREAT · GEORGE · ST

of Feet.

INK-PHOTO. SPRAGUE & Co 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.



MOORGATE COURT E.C. Entrance Hall

H. Huntly-Gordon A.R.I.B.A. Architect

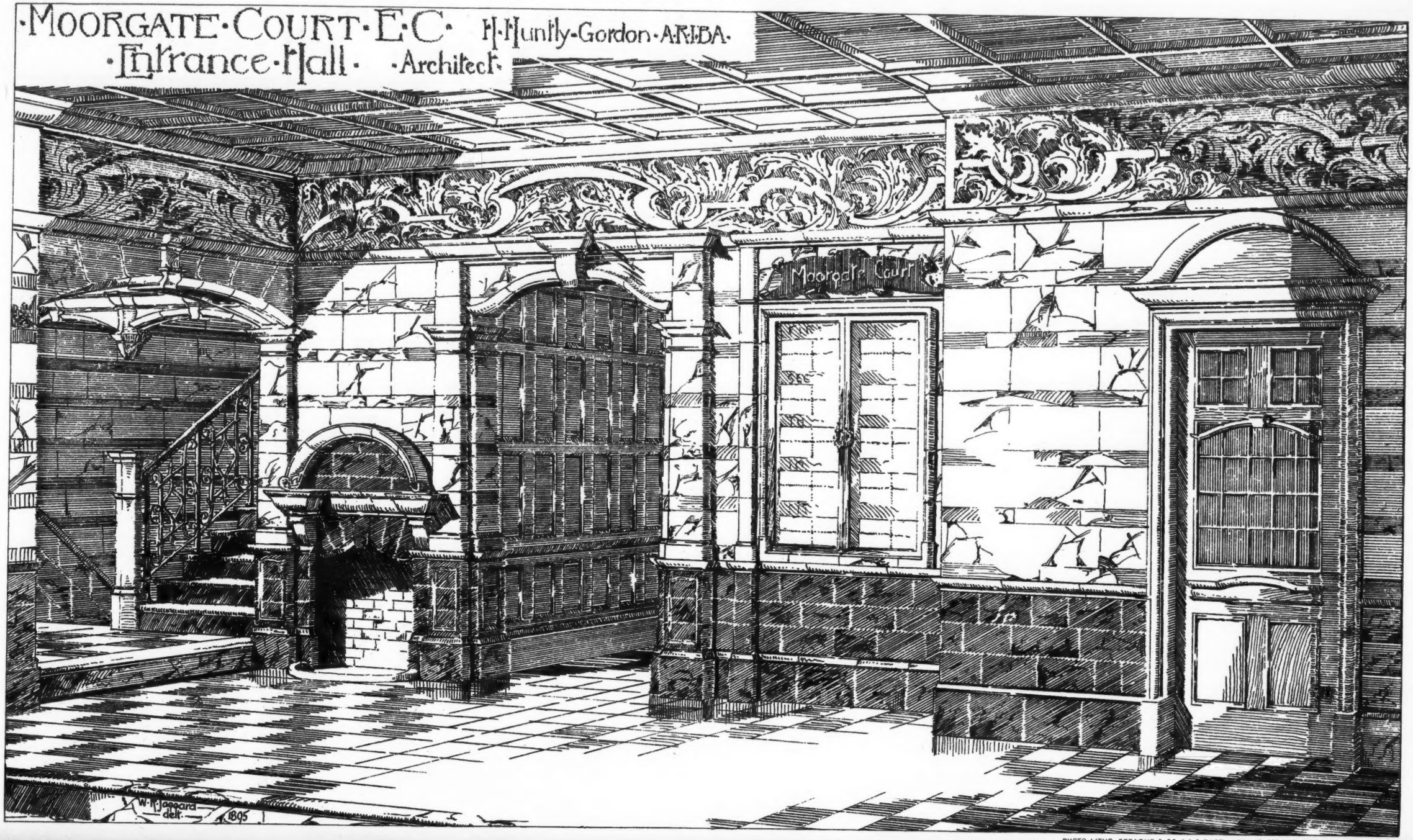
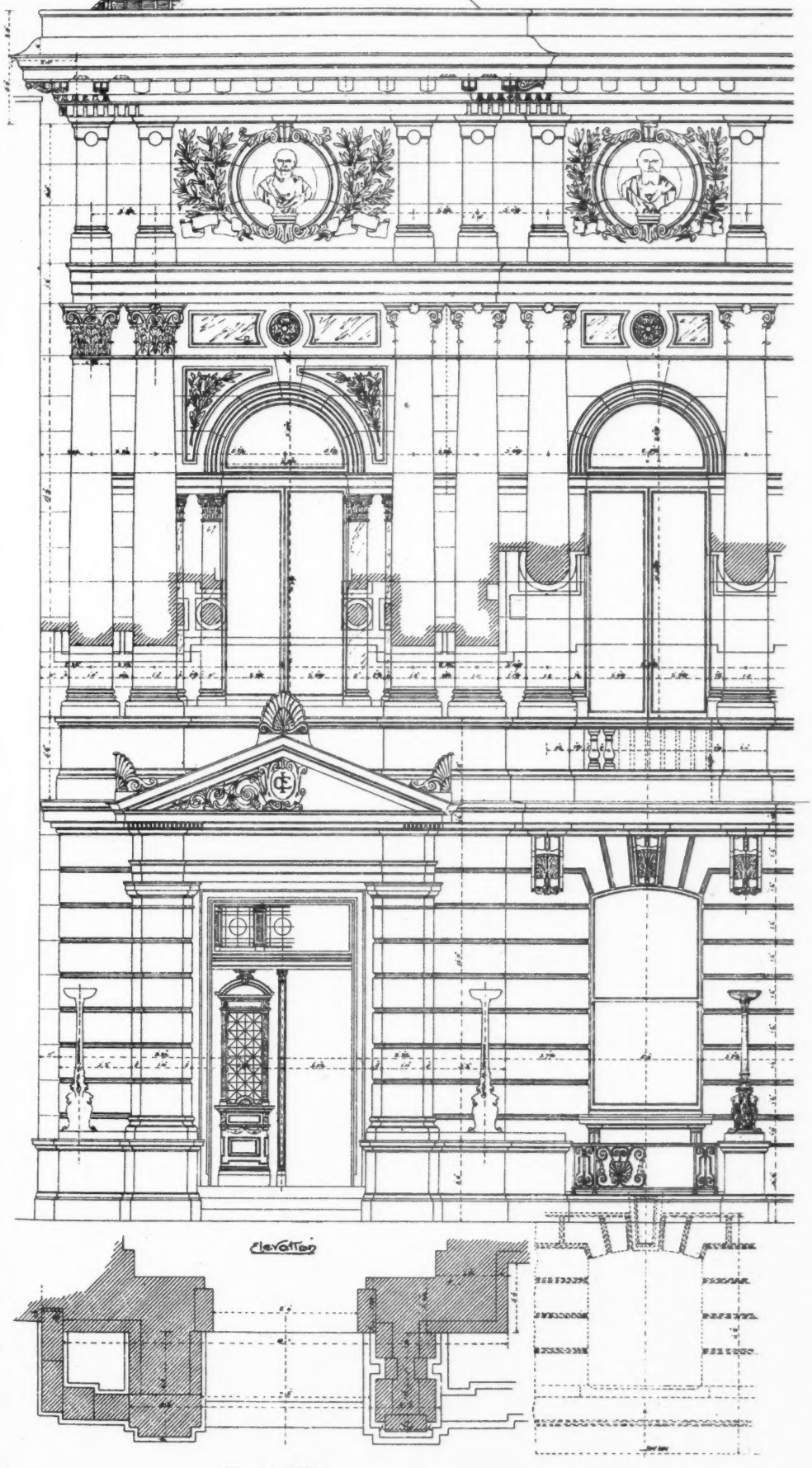


PHOTO-LITHO. SPRAGUE & Co 4 & 3 EAST HARDING STREET FETTER LANE. E.C.

THE INSTITUTION OF CIVIL ENGINEERS

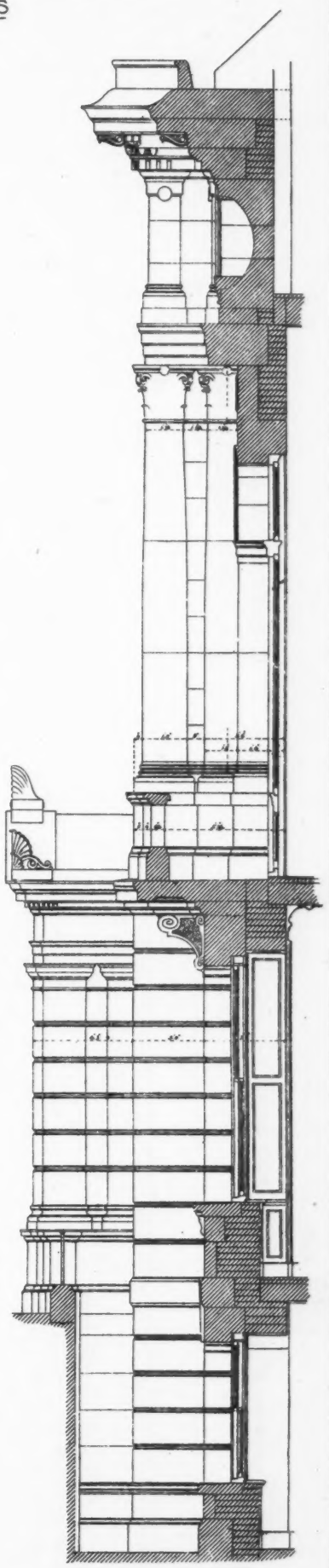
MASONS DETAILS



Elevation

Plan thro' Porch

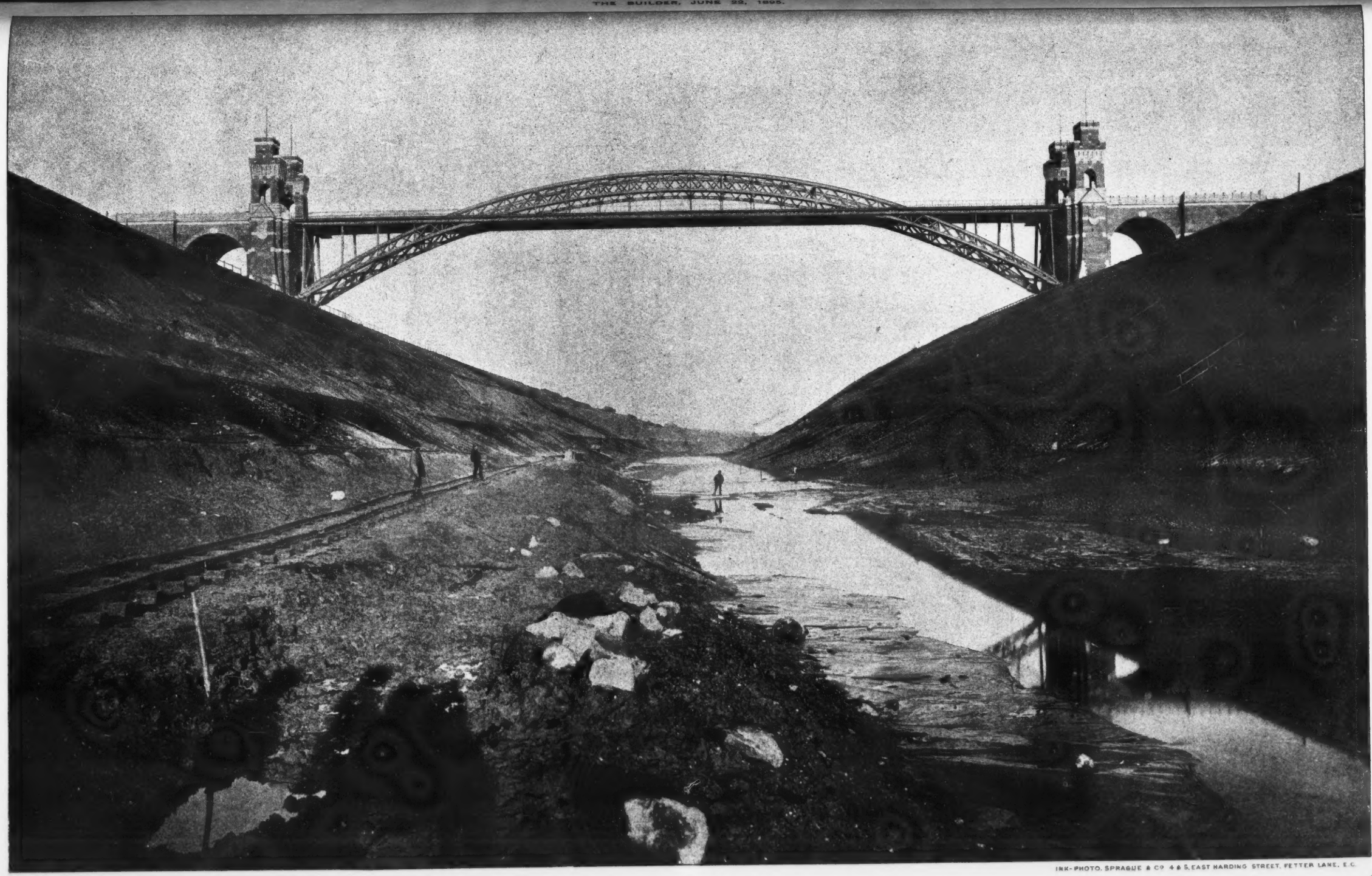
Scale of Feet



Section

Charles Barry, Esq.ᵗ
1895

PHOTO-LITHO. SPRAGUE & Co 4 & 5 EAST HARDING STREET FETTER LANE, E.C.



INK-PHOTO. SPRAGUE & Co 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

NORTH SEA AND BALTIC CANAL: THE BRIDGE AT GRÜNENTHAL.